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SITE INSPECTION REPORT FOR MONSANTO CHEMICAL COMPANY SODA SPRINGS, IDAHO

TDD F10-8702-06

Report Prepared by: Ecology and Environment, Inc.
Date: April 1988

Submitted to: J.E. Osborn, Regional Project Officer
Field Operations and Technical Support Branch
U.S. Environmental Protection Agency
Region X
Seattle, Washington

6284

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MONSANTO CHEMICAL COMPANY
SODA SPRINGS, IDAHO
TDD F10-8702-06

Site Name/Address

Monsanto Chemical Company
P.O. Box 816
Soda Springs, Idaho 83276

Participants

Thomas Colligan, FIT, E&E, Seattle (206) 624-9537
Gerald Lee, FIT, E&E, Seattle (206) 624-9537
Jeffrey Whidden, FIT, E&E, Seattle (206) 624-9537

Principal Site Contacts

Robert Geddes, Environmental Engineer, Monsanto Chemical Corporation, Soda Springs, Idaho (208) 547-3391

Date of Initial Site Visit

March 23, 1987 0800 - 1100 hours

Dates of Sampling

November 2-4, 1987 Surface Water, Ground Water, Pond and Sediment Sampling

DISCLAIMER

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ABSTRACT

Under U.S. Environmental Protection Agency (EPA) Contract Number 68-01-7347 and Technical Directive Document (TDD) F10-8702-06, a file review and site inspection of the Monsanto Chemical Company, Soda Springs, Idaho, was conducted to evaluate the facility's status within the Agency's Uncontrolled Hazardous Waste Site Program. As a part of this inspection, 12 ground water, two surface water, two process water, and two sediment samples were collected to verify the presence and possible sources of contaminants in ground water under the site. The samples were analyzed for EPA Target Compound List (TCL) inorganics, as well as fluoride, sulfate, and phosphorous. Elevated levels (i.e. concentrations either ten times greater than background or three times greater than analytical detection limits) of cadmium, arsenic, manganese, nickel, selenium, potassium, vanadium, sodium, zinc, fluoride, sulfate, and phosphorous were detected in on-site monitoring wells. Elevated levels of selenium, vanadium, and zinc were detected in an off-site spring and an effluent discharge stream.

1.0 INTRODUCTION

The Monsanto Chemical Company (MCC) plant near Soda Springs, Idaho, is an active facility that has been identified by the Region X U.S. Environmental Protection Agency (EPA) and the Idaho Hazardous Materials Bureau from Preliminary Assessment (PA) screening as requiring additional information concerning ground water contamination under the site. Ecology and Environment, Inc. (E&E), under EPA Contract No. 68-01-7347 and Technical Directive Document (TDD) No. F10-8702-06, conducted a site inspection and sampling program at the MCC plant to evaluate the nature and degree of ground water contamination and ascertain the need for and scope of additional work.

A Site Inspection represents the final step of a three-step investigative process utilized by the EPA to identify and rank potential or actual hazards at a particular site relative to other sites across the nation. Specifically, the SI is intended to gather sufficient additional data, supplemental to that gathered during the Site Discovery and PA activities, to rank sites for possible remedial work and aid in the process of determining the scope of such work. The SI is not intended to provide complete environmental characterization of a site.

The Monsanto plant produces elemental phosphorous which is used primarily for the manufacture of phosphoric acid. The plant generates a number of process waste streams which contain numerous inorganic compounds and metals. Most liquid and solid wastes are stored or treated in on-site ponds or piles.

A hydrogeological investigation performed by Golder Associates in 1985 (1) identified several contaminant plumes in two aquifers beneath the site with elevated concentrations of metals and anions. The investigation concluded that the contaminants originated in the locations of former unlined ponds and a hydroclarifier.

This document presents results of E&E's site inspection efforts. Included is information pertaining to ownership, history, environmental setting, and operations of the site, as well as field data developed during sampling and site characterization activities. Photographic documentation is presented in Appendix A and information collected during the inspection is summarized on EPA Form 2070-13 in Appendix B.

2.0 OWNER/OPERATOR

MCC purchased the site from Vernal Hopkins of Soda Springs, Idaho in 1952, and built an elemental phosphorous plant on the property. The property was used for farming prior to its purchase by MCC (2). MCC's corporate offices are located at 800 N. Lindbergh Boulevard, St. Louis, Missouri, 63167.

3.0 LOCATION

The facility is located approximately one mile north of the City of Soda Springs, Idaho, in portions of Sections 29, 30, 31, and 32, Township 8 South, Range 42 East of the Boise Meridian. The site is accessed via State Highway 34, north of Soda Springs (Figure 1).

4.0 SITE DESCRIPTION AND SURROUNDING AREA

The MCC facility occupies 530 acres in a broad rural valley near the western base of the Aspen Range. Significant agricultural crops in the area include wheat and hay. A number of other large industrial complexes are located in the valley, including the Kerr-McGee Chemical Corporation, directly across State Highway 34 from MCC, and the Nu-West Industries facility, located approximately four miles to the north.

The largest population center in the area is the City of Soda Springs, with an approximate population of 3,000. Population demographics within a three-mile radius of the facility are summarized in Table 1.

TABLE 1

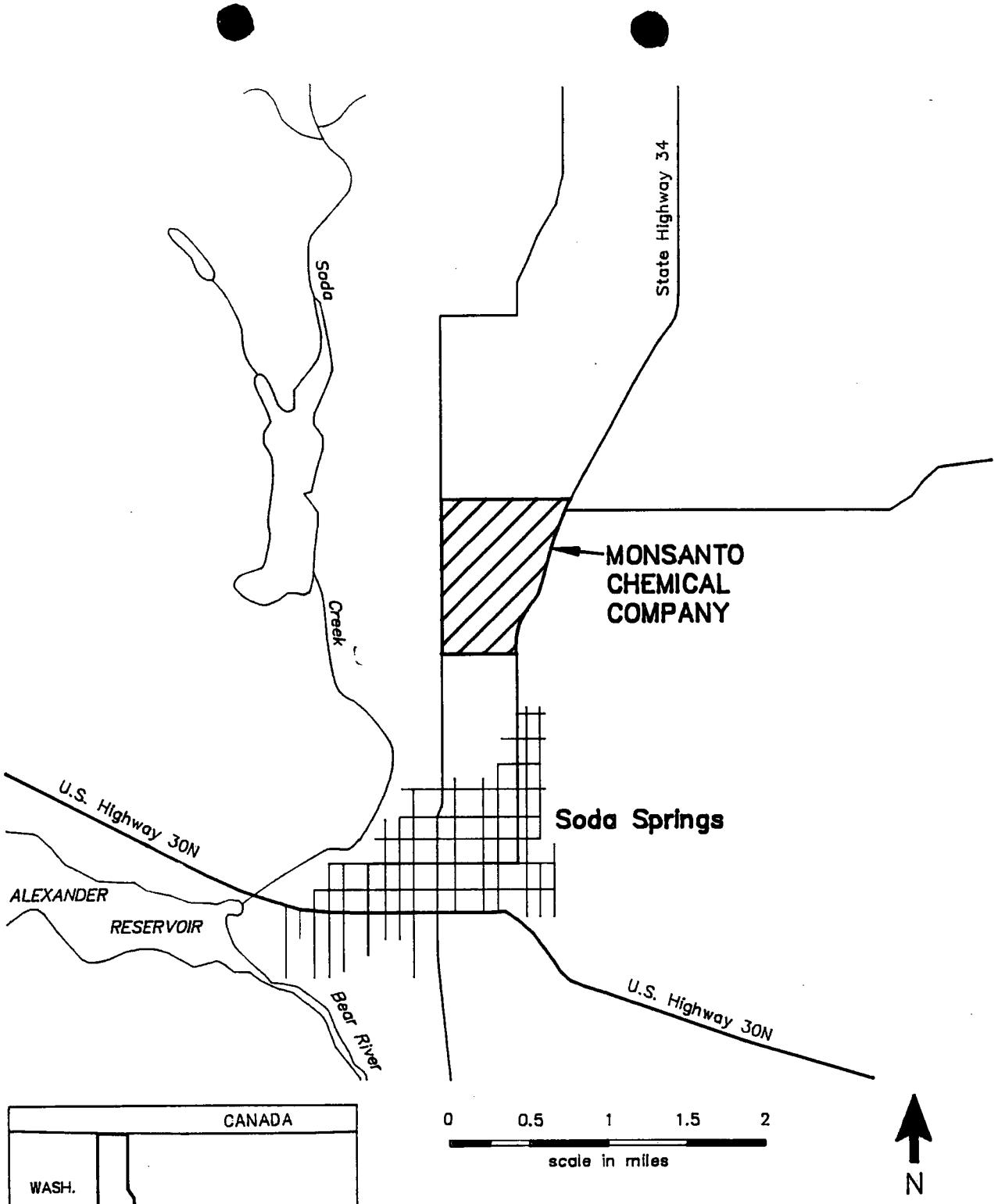
POPULATION DEMOGRAPHICS (2, 3)

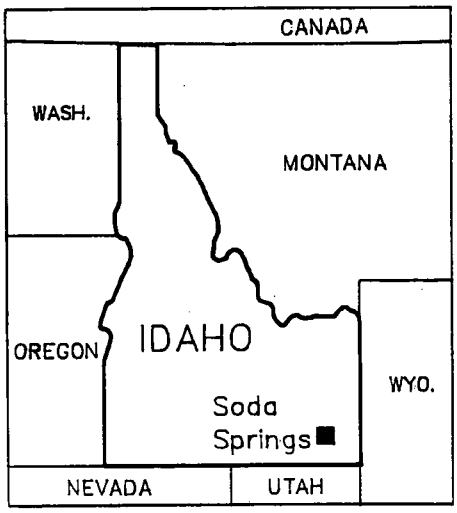
Radial Distance	Demographic Description
On Site	Number of Employees: 400
One Mile	Residents: approx. 27 Buildings: 45
Two Miles	Residents: approx. 1,400 Buildings: 400
Three Miles	Residents: approx. 3,100 Buildings: 800

5.0 TOPOGRAPHY AND DRAINAGE

The MCC Site is located in the Bear River Valley of southeastern Idaho. The basin is a broad, flat valley bordered on the east by the Aspen Range and on the west by the Soda Springs and Chesterfield Ranges. These mountain ranges rise 1,000 to 1,500 feet above the valley floor.

The northern boundary of the drainage basin is formed by the Blackfoot Reservoir which lies 12 miles north of the site (Figure 2). Surface drainage within the valley flows dominantly to the south, with Soda





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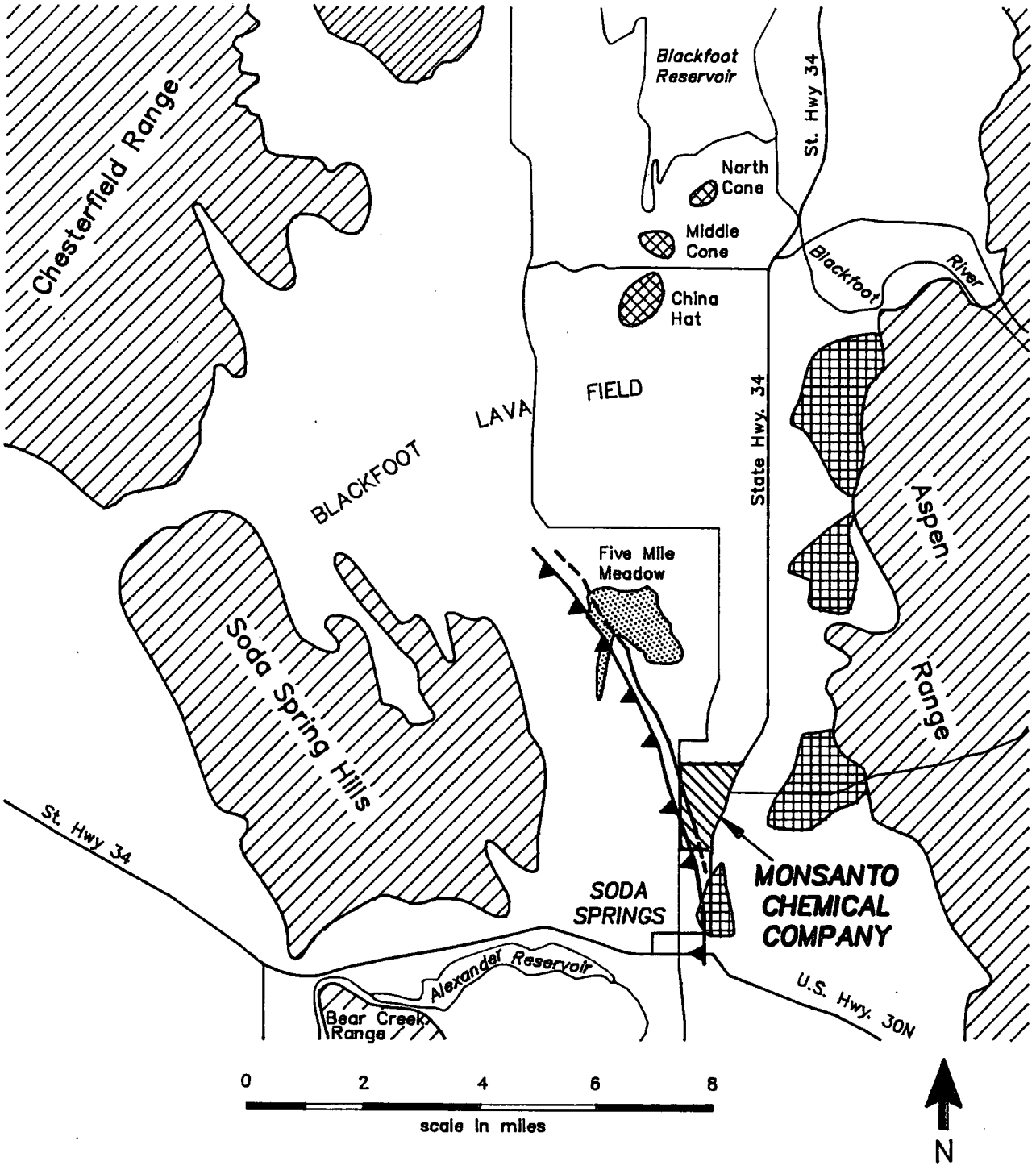
Job: F10-8702-06	Waste Site: ID0024
Drawn by: D. P.	Date: March 25, 1988

FIGURE 1
LOCATION MAP
MONSANTO CHEMICAL COMPANY
Soda Springs, ID



LEGEND

- Alluvium
- Volcanic cone or dome
- Pre-tertiary bedrock
- Tufa
- Thrust fault (sawteeth on upper side)
- Normal fault (dashed where inferred)

Source: 1,4

ccology & environment, inc.	
Job: F10-8702-06	Waste Site: ID0024
Drawn by: D. P.	Date: May 4, 1988

FIGURE 2
GENERALIZED GEOLOGIC MAP
MONSANTO CHEMICAL COMPANY
Soda Springs, ID

Creek forming the main drainage feature (3). Soda Creek flows south from its headwaters near Five Mile Meadows toward the Alexander Reservoir immediately west of the town of Soda Springs (Figure 1). At its closest, Soda Creek passes within 2,000 feet of the western boundary of the MCC Site.

6.0 GEOLOGY/HYDROLOGY

6.1 Regional Geology

The Bear River Valley is located transitionally between the Basin and Range Geologic Province, characterized by north-trending mountain ranges bounded by normal faults and the Middle Rocky Mountains, characterized by north-trending thrust faults and folds. Locally, the Bear River Valley is bordered by the Aspen, Soda Springs, and Chesterfield Ranges (Figure 2).

The geologic units exposed in the Bear River Valley consist of Quaternary-age basaltic lava flows (4). The flows are part of the larger Blackfoot Lava Field. The basalt flows average several hundred feet in thickness and are underlain by tuffaceous sandstones, conglomerates, and limestones belonging to the Tertiary-age Salt Lake Formation (4). The Salt Lake Formation overlies pre-Tertiary rocks, which are uplifted and exposed along the flanks of the Aspen and Chesterfield Ranges. Included in the pre-Tertiary stratigraphy is the Permian-age Phosphoria Formation. This formation is mined locally for its phosphorous content.

In addition to these bedrock deposits, recent unconsolidated sediments mantle much of the Bear River Valley. These sediments consist of silts, sands, and gravels deposited from stream channels, slope wash, and landslides (4). Also included are terrace deposits from high stands of Bear Lake (located seven miles to the south) which once stood 30 feet higher than present day levels.

6.2 Local Geology

Site-specific geologic and hydrogeologic information presented in the following sections is summarized from data developed by Golder Associates in 1985 (1) for MCC unless otherwise noted.

The MCC Site is underlain by three to 20 feet of overburden consisting mostly of silty clay with minor sandy gravel deposits. Beneath the overburden are up to five lava flows totaling up to 240 feet in thickness. The flows are separated by scoriaceous cinder zones and interbedded silt, sand, and gravel. Lying beneath the basalt flows is thought to be the Salt Lake Formation.

A major northwest-trending fault is presumed to traverse the western half of the site (Figure 2). The fault causes displacement up to 20 feet across certain stratigraphic horizons.

6.3 Regional Hydrogeology

Ground water occurs in both the bedrock and overburden deposits. The overburden sediments yield variable amounts of water, but production is limited because of the predominantly silty and unsaturated nature of the deposits. Wells completed in these units are used primarily for domestic and stock needs (5).

The basalts of the Blackfoot Lava Field contain the most productive aquifers in the region. Ground water occurs primarily between individual lava flows in porous zones of rubble and cinder. Ground water from the basalts is used for industrial, domestic, and irrigation purposes (5).

The rocks of the Salt Lake Formation and the pre-Tertiary rocks yield variable amounts of water to wells. The water is used locally for domestic and stock purposes (5).

Recharge to the aquifers in the overburden sediments and basalts occurs by infiltration of meteoric water and leakage from the Blackfoot Reservoir. Recharge to the older formations is thought to occur by infiltration of meteoric water along the flanks of the bordering mountains.

Construction of the Blackfoot Reservoir had a dramatic affect on the water table in the Soda Creek Basin. After construction of the reservoir in 1910, the Five Mile Meadows area located seven miles to the south was transformed from productive crop land to marsh land. In addition, the flow volumes of Soda Creek, which drains the central portion of the basin, reportedly doubled as a result of the elevated ground-water levels (5).

The direction of ground-water movement in the Soda Creek Basin is generally to the west-southwest (5). This pattern is locally affected by the northwest-southeast trending normal faults that exist in the area (4). The faults serve as conduits for the movement of ground water and cause local changes in the vertical and/or horizontal patterns of flow.

Springs are common in the Bear River Valley. Some of these springs have precipitated large deposits of calcium carbonate in the form of travertine or tufa. Often, the mineral content of the springs renders the water unsuitable for domestic use.

6.4 Local Hydrogeology

Ground water is reported to occur in four hydrostratigraphic zones under the site (1). The overburden soils and the Salt Lake Formation comprise the uppermost and lowest zones, respectively. These zones exist only in the northern portion of the site and produce limited quantities of ground water. The remaining two zones are found in the basalt flows. The basalts transmit large quantities of ground water and supply all three plant production wells. The basalts are divided into

two hydrostratigraphic zones, an upper zone and a lower zone. The division is based on the presence of basaltic aquitards which hydraulically separate the two zones.

Ground water flow in the upper and lower basalt zones is reportedly to the south (1). A ground water flow map prepared by Golder Associates (1) for the upper zone is reproduced in Figure 3. The map shows flow directions being strongly influenced by pumpage of the supply wells which have created a cone of depression. Ground water flow is also strongly influenced by the fault that traverses the site. The fault is thought to act as a barrier to ground water flow.

Recharge to the upper basalt zone and overburden sediments is thought to be via precipitation, regional underflow, and in places, upward leakage from the lower basalt zone. Recharge to the lower basalt zone is by upward leakage from the underlying Salt Lake formation and induced leakage from the upper basalt zone in response to production well pumpage (1).

7.0 CLIMATE

Southeastern Idaho has a semi-arid climate that is characterized by hot summers and cold winters. A National Weather Service weather station, is located four miles northeast of the MCC Site in Conda, reports approximately 19 inches of precipitation annually, with June having the highest monthly precipitation (2.15 inches) and July having the lowest monthly precipitation (0.78 inches). Average annual lake evaporation in the area is 35 inches per year, yielding a net precipitation value of minus 16 inches annually (6). The one-year, 24-hour maximum rainfall for Soda Springs is 1.06 inches (7). Snow typically remains on the ground from early November through April.

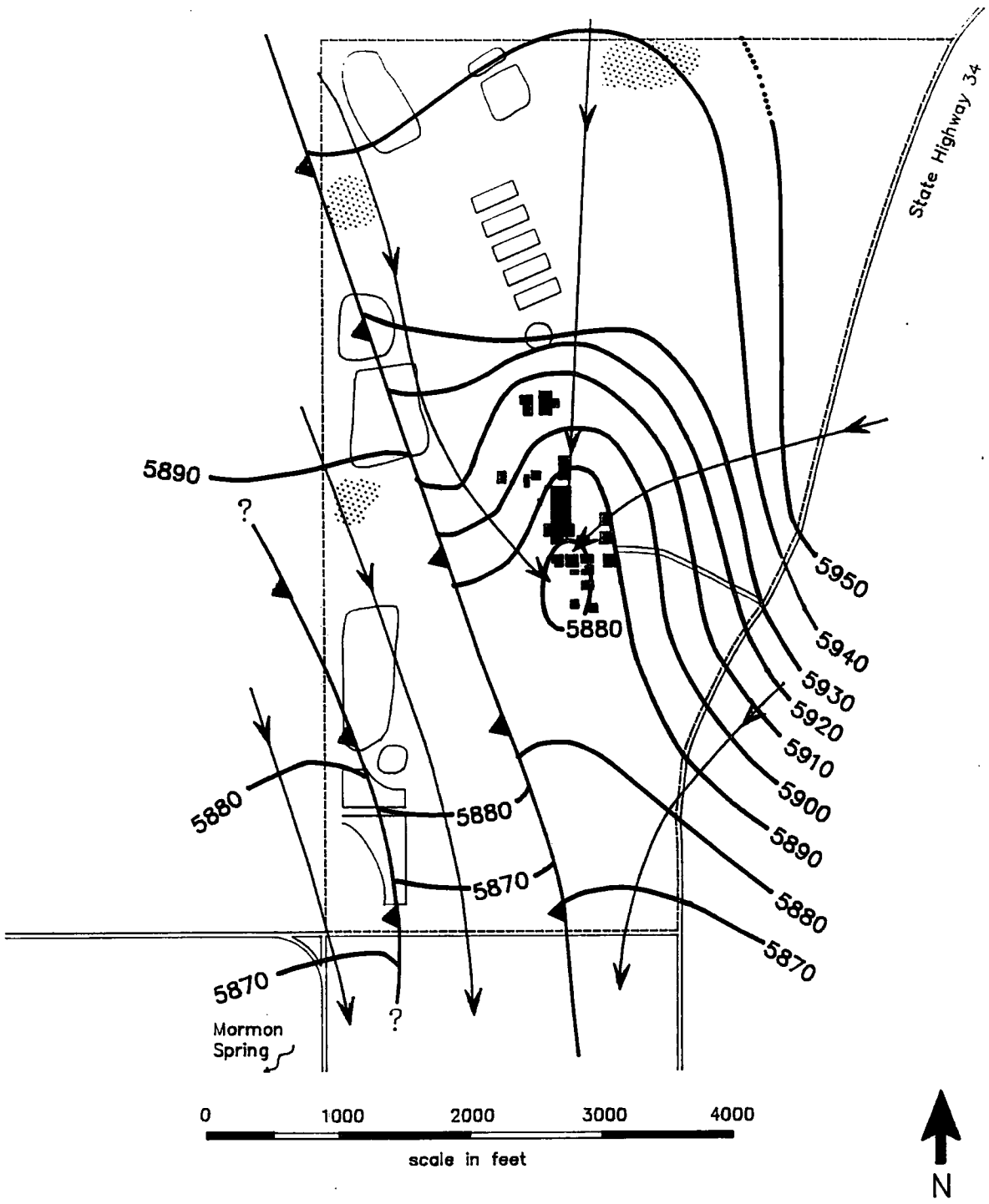
8.0 GROUND WATER AND SURFACE WATER USES

8.1 Surface Water

The closest surface water to the MCC Site is Soda Creek, located 2,000 feet to the west (Figure 1). Soda Creek is used for irrigation and stock water.

Soda Creek flows into the Alexander Reservoir, located near Soda Springs. The Alexander Reservoir is used primarily for recreation and power generation.

Approximately 4,200 acres of land are irrigated with a contribution from water derived from the Monsanto facility. The water is obtained from the on-site production wells, used for non-contact cooling purposes and discharged to Soda Creek which is diverted for irrigation one and one-half miles downstream.



LEGEND

- Monsanto Chemical Co. boundary
- Contour line (known)
- Contour line (inferred)
- Groundwater flow direction
- Fault (known)
- ? Fault (inferred)
- Building

Source: 1

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Job: F10-8702-06	Waste Site: ID0024
Drawn by: D. P.	Date: April 8, 1988

FIGURE 3
GROUND WATER FLOW DIRECTIONS
MONSANTO CHEMICAL COMPANY
Soda Springs, ID

8.2 Ground Water

Ground water (derived from wells and springs) in the Soda Springs area is used for domestic and public drinking supplies, irrigation, and industrial purposes. Within three miles of the site, ground water serves a population of approximately 3,500.

The City of Soda Springs Water Department distributes water to all residences within the city limits. This water is obtained from two springs (Formation and Ledge Creek Springs) located north of the city. The Water Department serves a population of over 3,000 (8).

There are 22 registered domestic wells within three miles of the site (9, 10), serving an estimated population of 80. Total depths of the domestic wells range between 19 feet and 400 feet below ground surface (10). MCC uses three on-site production wells. Two of the wells PW2 and PW-3) also serve approximately 400 employees with drinking water.

Seven registered wells located within three miles of the site are used for irrigation of approximately 4,300 acres (9). Table 2 summarizes ground water use within three miles of the MCC Site.

TABLE 2

GROUND WATER USE

Type of Well/Intake	Number of Wells/ Intakes	Depth (feet below ground surface)	Approximate Population/ Acreage Served within a three-mile radius
Domestic Wells	22	19 to 400	84 persons
Industrial Supply Wells	4	200 to 250	480 persons
Municipal Supply - Natural Springs	2	Surface	3,000 persons
Irrigation Wells	7	Unknown	4,309 acres

9.0 OVERVIEW OF SITE OPERATIONS

The MCC Plant produces elemental phosphorous using electric arc furnaces. The phosphorous produced is shipped off site and used in the manufacture of phosphoric acid. Phosphoric acid is a feedstock for numerous commercial and industrial products. A brief overview of the plant's operations from information obtained during the site inspection is presented below.

// Claimed as Confidential Business Information //

The furnace gases containing the phosphorous, carbon monoxide, and silicon tetrafluoride pass through a scrubber, which removes the particulates, then into a water spray condenser where the gaseous phosphorous is condensed. The residual gas is predominantly carbon dioxide which is rerouted into the kilns as supplemental fuel.

The molten phosphorous is then filtered to remove residual particulates. The sludge generated by filtration is roasted to recover any remaining phosphorous. The elemental phosphorous is piped into rail tank cars for shipment and is always stored and transported under water to prevent exposure to oxygen which results in a violent oxidation reaction.

10.0 CHARACTERIZATION OF WASTE STREAMS

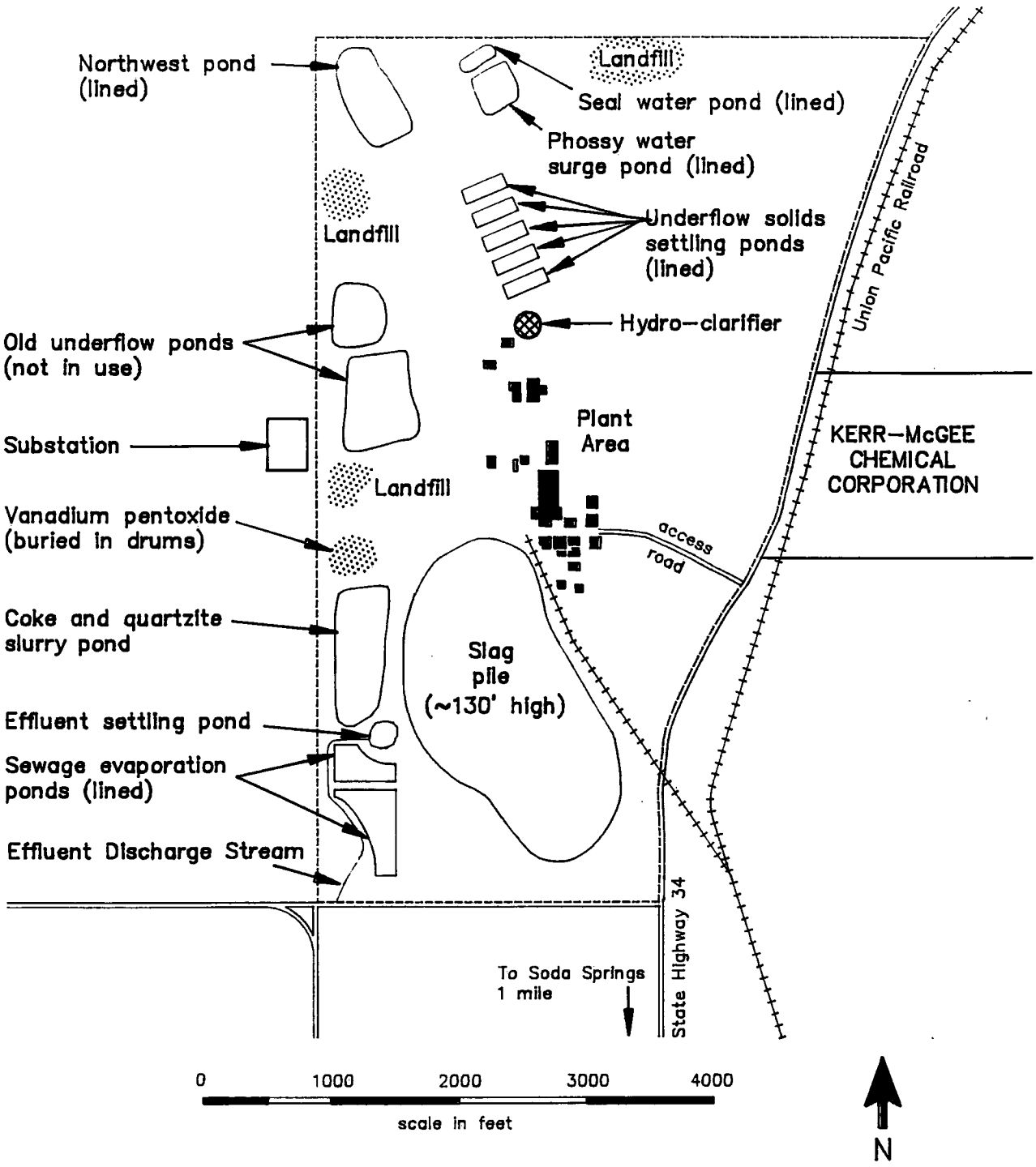
10.1 Production Related

Elemental phosphorous production involves numerous process streams, some of which produce wastes. A brief discussion of the major process and waste generating streams is presented below. Table 3 is a compilation of the waste and process streams discussed.

Slag constitutes the greatest quantity of waste produced by MCC. Molten slag is tapped from the base of the furnaces and poured out to cool in piles (Figure 4). The piles cover a large portion of the site and are greater than 150 feet in height.

TABLE 3
MONSANTO PROCESS AND WASTE STREAM SUMMARY

Process/Waste Stream	Storage Location	Liner	Current Status
Explosion Seal Water from Furnaces	Seal Water Pond	Bentonite	Active
Displacement/process Water (phossy water) from rail cars, storage vessels, and spray tower	Phossy Water Surge Pond	Bentonite	Active
Coke and Quartzite Slurry from drier	Past - Coke and Quartzite Slurry Pond Present - collected in baghouse	None	Inactive
Non-contact plant cooling water	Effluent settling pond (overflow water is discharged to Soda Creek)	None	Active
Kiln Dust Slurry	Hydroclarifier	Past - none Present - synthetic liner and leachate collection system	Active
	Old Underflow Solids Ponds	None	Inactive
	New Underflow Solids Ponds	Bentonite	Active (backup for hydroclarifier)
	Northwest Pond	Past - none	Active (as sanitary landfill)
Ferrophos Slag	Pile on ground (removed regularly)	None	Active
Calcium Silicate Slag	Pile on ground	None	Active
Waste Oil	Above ground tank; pumped monthly and removed from site.	Concrete	Active



LEGEND

Monsanto Chemical Co. boundary

Building

ecology & environment, inc.	
Job: F10-8702-06	Waste Site: ID0024
Drawn by: D. P.	Date: March 25, 1988

FIGURE 4
SITE MAP
MONSANTO CHEMICAL COMPANY
Soda Springs, ID

TABLE 4

EP TOXICITY RESULTS - MONSANTO SLAG, AUGUST, 1980

Component	(mg/l in extract)	Hazardous Waste Limit (mg/l)
Arsenic as As	< 0.005	5.0
Barium as Ba	< 0.5	100.0
Cadmium as Cd	< 0.005	1.0
Chromium as Cr	< 0.09	5.0
Lead as Pb	< 0.02	5.0
Mercury as Hg	< 0.001	0.2
Selenium as Se	< 0.005	1.0
Silver as Ag	< 0.01	5.0

Source: 2

The composition of the slag is dominantly calcium silicate. A sample of the slag was submitted by Monsanto for Extraction Procedure (EP) Toxicity testing in August, 1980. As indicated in Table 4, no test parameters were exceeded.

The ferrophos slag is cooled in separate piles. It is later sold to Kerr-McGee Industries for recovery of its vanadium content.

Dust generated by the furnaces is collected by electrostatic precipitators and transported to a chamber where any residual phosphorous is oxidized. The dust is then sent to a baghouse where it is stored.

The elemental phosphorous is condensed in a spray tower. The liquid phosphorous is then sent to storage location and rail cars under a water seal. The spray tower, storage, and rail car displacement waters are termed "phossy water" because they directly contact phosphorous and have a high phosphorous content. All phossy waters are sent to the phossy water surge pond (Figure 4) for cooling and acidification prior to being reused.

The furnaces have a separate water system, called the explosion seal, to prevent furnace gases from escaping at the point where the electrodes enter the furnace. The water is cooled in the seal water pond (Figure 4) prior to being recycled. Both the phossy water surge pond and seal water pond are bentonite-lined and generate little sediment.

The rotary kiln exhaust gas contains considerable particulate matter. A wet scrubber is used to remove these particulates. The resultant slurry is sent to a hydroclarifier (Figure 4) for dewatering. The excess water is recycled back to the wet scrubber. The solids are sent to the underflow solids ponds for storage (Figure 4) and are eventually recovered by feeding into the kiln. Occasionally, the under-

flow solids ponds are used for dewatering when the hydroclarifier is inoperative.

The underflow solid ponds are now bentonite-lined. Previous ponds were unlined. In 1985, the hydroclarifier was discovered to be leaking (2). It was replaced with a new system which includes a leachate collection system and synthetic liner.

Coke and quartzite dust resulting from the drier and scrubber were formerly settled out in a slurry pond (Figure 4). Presently, the dust is collected in a baghouse. The former slurry pond is currently dry, containing only sediment.

The plant uses a non-contact water cooling system for certain equipment. The water is taken from the three production wells and is discharged to Soda Creek via an effluent discharge stream (Figure 4). The temperature of this discharge water is permitted under the NPDES system. Prior to being discharged, the effluent water passes through a settling pond for particulate removal (Figure 4).

10.2 Other Wastes

The MCC plant once received 32 tons of vanadium pentoxide from a Florida facility for possible recovery of the vanadium. After the vanadium pentoxide was determined to be unrecoverable, it was put into plastic-lined drums and buried as waste in an on-site landfill. Also buried in on-site landfills are asbestos-containing insulation, construction debris, and office wastes.

Since 1977, the waste solvents generated by the facility have been containerized and picked up regularly by an outside recycler. Prior to 1977, the spent solvents were commonly mixed with waste oil and used as a dust suppresent on facility roads (2).

Beginning in 1974, an outside recycler was contracted to purchase waste oil for recycling. The waste oil is kept in a tank prior to collection.

Over the last several years, all PCB-containing transformers were replaced at the MCC facility (2). Also, four underground storage tanks for fuel oil and gasoline were replaced with above-ground tanks. The underground tanks were observed to be in good condition during removal (2).

11.0 PREVIOUS ENVIRONMENTAL STUDIES

In 1984, MCC issued a contract to Golder Associates to conduct a hydrogeological investigation of the Soda Springs facility (1). The investigation was performed to assess the impact of past and current operations on ground and surface water quality. As part of the investigation, 31 monitoring wells were installed around the facility to supplement seven existing wells. In addition, pump tests were performed on numerous monitoring wells and the three production wells. Water level

measurements and water quality sampling were performed on all wells including monitoring wells, nearby domestic wells, and production wells.

The hydrogeologic results of the Golder investigation have been briefly summarized in Section 6.2. The impact of the facility on local ground-water quality is summarized below.

Ground water under the site appears contaminated by various ions and metals including fluoride, cadmium, selenium, chloride, sulfate, and vanadium. The upper and lower basalt zones show evidence of contamination, with the contaminant plumes being more widely distributed and concentrated in the upper zone.

The sources of the contaminants in the upper basalt zone were identified as the site of the underflow solids pond, the northwest pond and the hydroclarifier. The plumes generally follow the predominant ground-water flow direction to the south-southeast, with a fluoride plume being the most widely dispersed. Above-background levels of fluoride were detected in a 1,000-foot wide zone south of the site's boundary to at least Mormon Springs. Selenium and sulfate plumes also extend beyond the site's boundary. Cadmium, chloride, and vanadium plumes appear to be restricted to the site area.

None of the contaminants in the upper basalt zone were detected immediately southeast of the production wells. It is thought that the cone of depression created by these wells intercepts the southeasterly transport of the plumes.

The contaminants detected in the lower basalt zone were fluoride, cadmium, selenium, chloride, and sulfate. The plumes appear to extend southeast from the old underflow solids area. No elevated concentrations of vanadium were detected. The plumes in the lower basalt zone are smaller and less concentrated than those in the upper basalt zone. It is thought that the ground-water quality in the lower basalt zone was impacted by either a downward component of the hydraulic gradient in the contaminated upper basalt zone, or leakage of contaminated water resulting from faulty well construction of TW 5.

A separate plume of chloride, sulfate, and vanadium may exist in the southeastern portion of the site. The plume appears to originate to the east of the MCC Site.

12.0 SAMPLING PROGRAM

12.1 Objectives and Scope

The objectives of the E&E site inspection were to:

- verify the presence and concentration(s) of TCL compounds and major ions in ground water under the site;

- o determine the presence of EPA Target Compound List (TCL) compounds in on-site ponds; and

- o determine if there is a need for further action at the site.

To accomplish these objectives, the following field activities were conducted:

- o collection of ground-water samples from eight monitoring wells screened in the upper basalt zone, seven of which have historically exhibited elevated levels of contaminants, and one of which is an apparently uncontaminated background well;

- o collection of samples from the liquid fraction of the phossy water and seal water ponds;

- o collection of ground-water samples from the three production wells and one downgradient domestic well;

- o collection of composite sediment samples from two of Monsanto's former slurry ponds; and

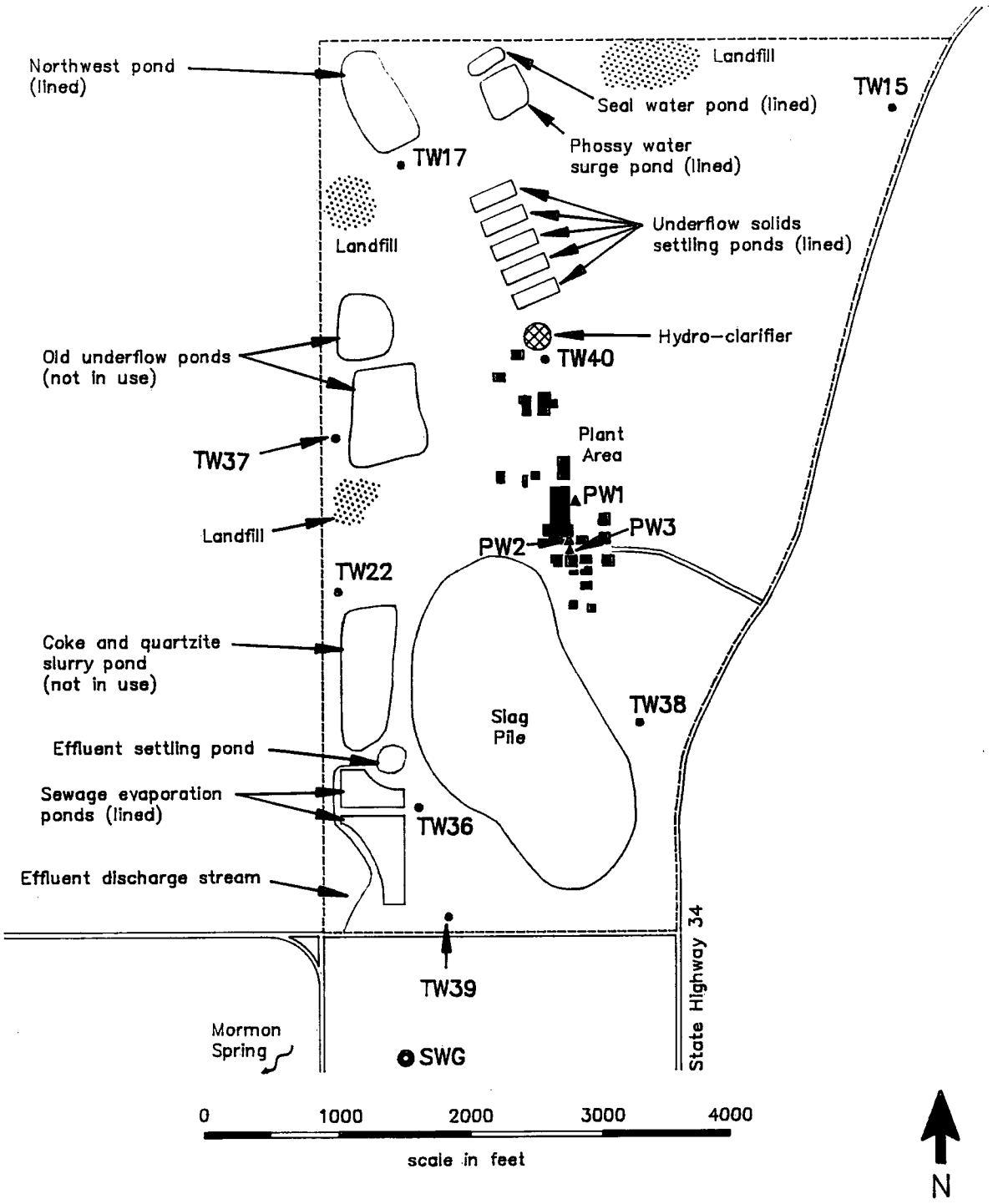
- o collection of surface water samples from one downgradient spring (Mormon Springs) and Monsanto's non-contact coolant discharge stream; and

12.2 Sample Numbers, Types, and Analytes

Table 5 presents a summary of the number and types of samples collected during the inspection and the associated analytical parameters. Figure 5 shows the locations for the well samples and Figure 6 shows the locations for pond and spring samples.

Each test well (TW) sample (TW15, TW17, TW22, and TW36 through TW40) and production well (PW) sample (PW1 through PW3), the domestic well sample, and Mormon Springs sample were analyzed for total and dissolved EPA Target Compound List (TCL) inorganics, except cyanide (see Appendix C and Table 5). Due to their active and past use as drinking water sources, all production wells were also analyzed for TCL volatiles, semi-volatiles, PCBs, and pesticides (see Appendix C). Analyses for sulfate, fluoride, total phosphorous, hydrolyzable phosphorous, and orthophosphate ("ions") were also requested for each ground water sample and Mormon Springs.

The effluent discharge stream, the phossy water and seal water ponds, the old underflow pond (unlined), and the coke and quartzite slurry pond (Figure 4) were analyzed for TCL total inorganics (except cyanide) and ions.

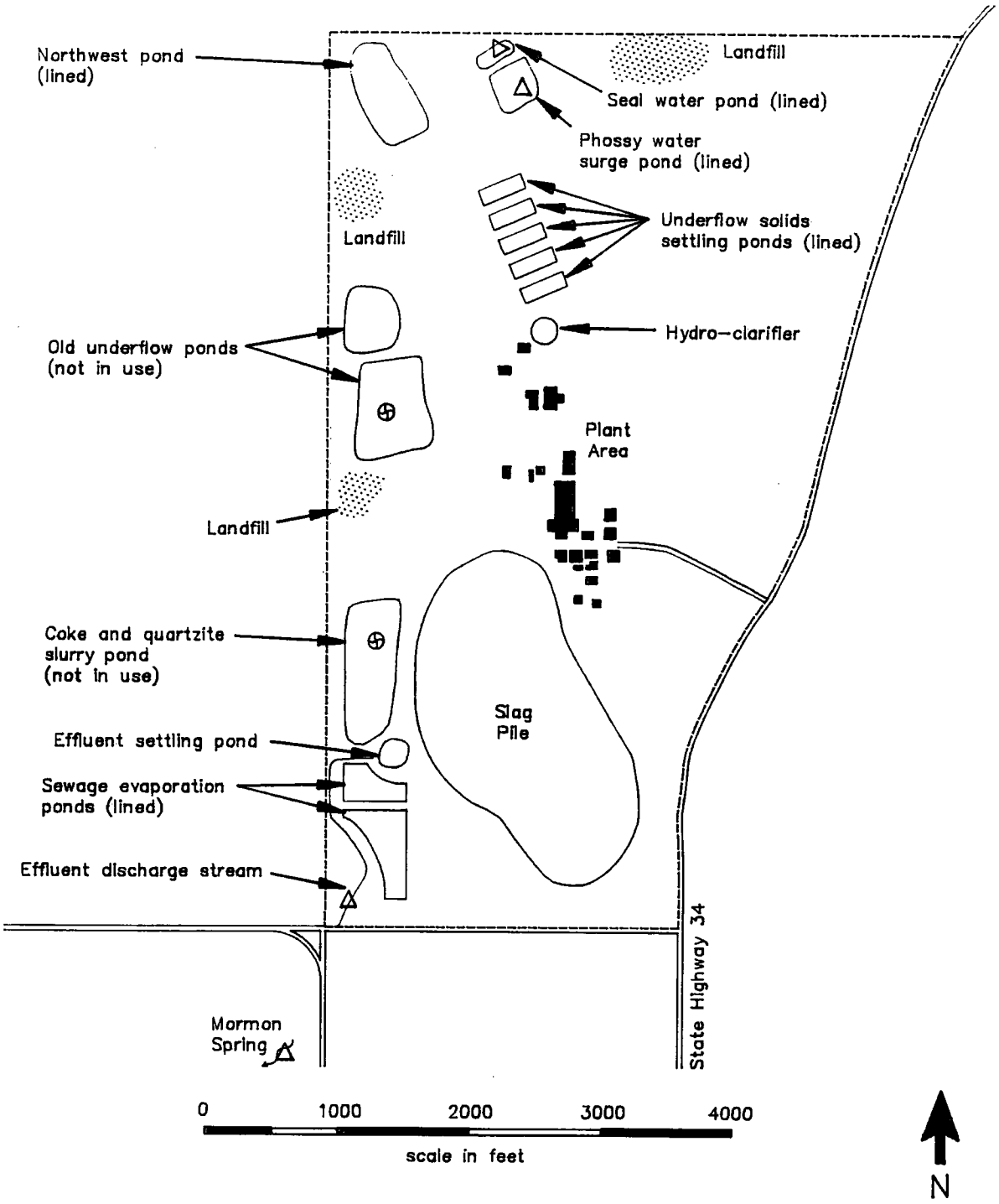


LEGEND

- Monsanto Chemical Co. boundary
- Building
- Monitoring well
- Production well
- Domestic well
- Spring

ecology & environment, inc.	
Job: F10-8702-06	Waste Site: ID0024
Drawn by: D. P.	Date: March 25, 1988

FIGURE 5
WELL SAMPLE LOCATIONS
MONSANTO CHEMICAL COMPANY
Soda Springs, ID



LEGEND

- Monsanto Chemical Co. boundary
- Building
- Composite sediment sample
- Pond or surface water sample
- Spring

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Job: F10-8702-06	Waste Site: ID0024
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FIGURE 6
SEDIMENT, POND AND SURFACE WATER SAMPLE LOCATIONS
MONSANTO CHEMICAL COMPANY
Soda Springs, ID

TABLE 5

SAMPLE SUMMARY

Matrix	Sample Location	Date Sampled	Sample Type	Analytical Parameters
Ground Water	TW 15	11/03/87	Grab	1,3
	TW 17	11/03/87	Grab	1,3
	TW 22	11/03/87	Grab	1,3
	TW 36	11/03/87	Grab	1,3
	TW 37	11/03/87	Grab	1,3
	TW 38	11/03/87	Grab	1,3
	TW 39	11/03/87	Grab	1,3
	TW 40	11/03/87	Grab	1,3
	PW 1	11/03/87	Grab	1,3
	PW 2	11/03/87	Grab	1,2,3
	PW 3	11/03/87	Grab	1,2,3
	Harris Residence (SWG)	11/04/87	Grab	1,3
	Transfer Blank (TP)	11/04/87	Grab	1,2,3
Surface Water	Mormon Springs (MS)	11/04/87	Grab	1,3*
	Monsanto's Effluent Discharge (ED)	11/04/87	Grab	1,3*
Waste Pond Water	P3 Seal Pond	11/04/87	Grab	1,3*
	P4 Phossy Water Surge Pond	11/04/87	Grab	1,3*
Soil	P1 Old Underflow Pond	11/04/87	Composite	1,3*
	P2 Coke & Quartzite Slurry Pond	11/04/87	Composite	1,3*

1. TCL inorganics (total and dissolved) except cyanide (see Appendix C).
2. TCL volatiles, loose/neutral/and extractables, PCBs, and pesticides (see Appendix C).
3. Sulfate, fluoride, total phosphorous, hydrolyzable phosphorous, orthophosphate.

* Total inorganics only.

Quality Assurance/Quality Control (QA/QC) samples included two transfer blanks (filtered and unfiltered) analyzed for the TCL inorganic compounds and one duplicate used for matrix spike organic analysis. The blank samples were prepared in an on-site laboratory and the duplicate was prepared by doubling the sample volume from a production well.

12.3 Sampling Methodologies and Decontamination

Ground water samples were collected directly from production and domestic well taps located on the intake site of any holding tanks or chemical treatment devices. Well PW2 and the domestic well (both inactive prior to sampling) were purged for approximately 10 minutes prior to sampling in an attempt to evacuate stagnate water in the delivery lines. Specific conductance, temperature, and pH were monitored in all cases for stabilization prior to sampling.

With the exception of well TW38, ground water samples obtained from monitoring wells were collected using the following process:

- the static water volume was determined;
- approximately three to four static water volumes were purged using the dedicated submersible electric pumps already in the wells; and
- water samples were collected from a well head sampling port. Well TW38 did not contain a dedicated pump. Consequently, the well was purged and sampled using a clean PVC bailer.

Pond water samples were collected by hand dipping the sample containers no less than one inch below the pond surface. Sediment samples were obtained by collecting eight aliquots taken at random locations within each pond and homogenizing them using dedicated, stainless steel spoons.

Samples from the production wells, the transfer blank, the domestic well, and Mormon Springs were filtered after collection using air suction with a 0.45 micron paper filter in an on-site laboratory. All other samples intended for dissolved analyses were filtered in the field via an in-line, 0.45 micron filter. The effluent discharge stream and pond water samples were not filtered.

13.0 SAMPLING RESULTS AND DISCUSSION

13.1 Organic Analyses

No volatile, semi-volatile, pesticide, or PCB compounds were detected in any of the three production well samples (PW1, PW2, or PW3) or the transfer blank (TP). Appendix F contains the full set of organic results.

13.2 Inorganic Analyses

13.2.1 Ground-Water Samples

Table 6 is a compilation of results for elemental analyses performed on the well water samples. Included are separate columns for the unfiltered and filtered analyses.

Comparison between the filtered and unfiltered sample results reveals, for the most part, little differences in elemental concentrations. The values for the unfiltered samples are usually slightly higher than the filtered. The exception is TW 38, where the unfiltered values are significantly greater than the corresponding filtered values. This is probably a result of the turbid nature of the unfiltered water from this well. All other wells produced clear water.

In several cases, the elemental value for the filtered sample is greater than the unfiltered sample. In most of these occurrences, the reported concentrations are below the contract required detection limit and, therefore, are listed as an estimated values only. Such discrepancies are assumed to result primarily from the inaccuracy of the analytical method in detecting very low concentrations of elements. In well TW40, however, thallium was reported at 43 ug/l in the filtered sample and was not detected in the unfiltered sample. This discrepancy is large enough that laboratory or field contamination is likely involved. Thallium was not found in any other sample.

Examination of the unfiltered results indicates that numerous elements were detected in downgradient wells at concentrations above those detected in the background (upgradient) well (TW 15). Elements detected at elevated concentrations (greater than 10 times background concentrations or greater than three times detection limit) include zinc, selenium, and manganese (six wells); cadmium, nickel, potassium and vanadium (five wells); sodium (four wells); aluminum, arsenic, and iron (two wells); and chromium (one well).

The most contaminated wells appear to be TW 37 and TW 40 with 12 and eight elements at elevated levels, respectively. The least contaminated well was the downgradient domestic well (SWG) where no elements were detected at elevated levels. Table 7 is a summary of those elements detected at elevated levels in all unfiltered samples.

Elements detected in unfiltered samples at concentrations above Federal Maximum Contaminant Levels (MCL) for drinking water are cadmium (wells PW-1, TW 22, TW 36, TW 37, and TW 40) and selenium (wells PW-1, TW 22, TW 36, TW 37, TW 39, and TW 40).

TABLE 6

SUMMARY OF INORGANIC ANALYSES - WELL WATER SAMPLES
MONSANTO CHEMICAL COMPANY, SODA SPRINGS, IDAHO
(ug/l)

	PW 1		PW 2		PW 3		TW 15		TW 17	
Element	Unfiltered	Filtered	Unfiltered	Filtered	Unfiltered	Filtered	Unfiltered	Filtered	Unfiltered	Filtered
Aluminum	20 U	26 J	23 J	20 U	28 J	20 U	34 J	20 U	29 J	22 J
Antimony	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U
Arsenic	6 J	6 J	4 J	4 U	4 U	4 U	4 U	4 U	5 J	6 J
Barium	77 J	76 J	53 J	54 J	63 J	64 J	64 J	64 J	49 J	50
Beryllium	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cadmium	88*	90*	7	6	5 U	10	5 U	5 U	7	5 U
Calcium	114000	113000	109000	109000	110000	109000	104000	105000	45700	45500
Chromium	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Cobalt	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	7 J	8 J
Copper	16 J	31	10 J	10 J	9 U	9 U	9 U	9 U	9 U	9 U
Iron	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	56 J	140
Lead	1 U	1 U	1 U	1 U	1 U	1 U	1 U	4 J	1 U	1 U
Magnesium	61500	60800	52400	52600	49500	49600	42200	42700	168000	171000
Manganese	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	1320	1330
Mercury	0.2U	0.2U	0.2U	0.2U	0.2U	0.2U	0.2U	0.2U	0.2U	0.2U
Nickel	7 U	7 U	7 J	7 U	7 U	7 U	7 U	7 U	18 J	21 J
Potassium	10400	9780	4830 J	4740 J	4800	4830 J	2700 J	3080 J	17600	17700
Selenium	19 J*	14 J*	2 J	10 UR	10 J	7 J	1 UR	10 UR	2 J	2 J
Silver	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Sodium	51300	50800	16200	15300	22900	22900	8380	8530	90800	91600
Thallium	2 U	2 U	2 U	2 U	20 U	2 U	2 U	2 U	20 U	20 U
Vanadium	10 J	11	11 J	11 J	38 J	37 J	2 J	2 U	3 J	3 J
Zinc	112	116	14 J	27	13 J	20	13 U	17 J	27	25

U - The material was analyzed for, but was not detected. The associated numerical value is the estimated detection limit.
J - The associated numerical value is an estimated quantity because quality control criteria were not met or concentrations reported were less than the CRQL.
R - Quality Control indicates that data are unusable (compound may or may not be present). Resampling and reanalysis are necessary for verification.
* - Exceeds Maximum Contaminant Level (MCL) for Primary Drinking Water Standards.

TABLE 6 (Cont.)

SUMMARY OF INORGANIC ANALYSES - WELL WATER SAMPLES
MONSANTO CHEMICAL COMPANY, SODA SPRINGS, IDAHO
(ug/l)

	TW 22		TW 36		TW 37		TW 38		TW 39	
Element	Unfiltered	Filtered	Unfiltered	Filtered	Unfiltered	Filtered	Unfiltered	Filtered	Unfiltered	Filtered
Aluminum	51 J	58 J	34 J	31 J	1260	1210	9990	78 J	48 J	49 J
Antimony	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U
Arsenic	7 J	10 J	4 J	5 J	25	31	12	4 U	5 J	6 J
Barium	33 J	33 J	32 J	31 J	45 J	45 J	163 J	87 J	25 J	25 J
Beryllium	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cadmium	41*	36*	57*	57*	781*	782*	5 U	8	10	8
Calcium	160000	157000	95300	93700	133000	132000	131000	121000	100000	98500
Chromium	5 U	5 U	5 U	5 U	34	26	5 U	5 U	5 U	5 U
Cobalt	6 U	6 U	6 U	6 U	9 J	7 J	10 J	6 U	6 U	6 U
Copper	9 U	9 U	9 U	9 U	9 J	10 J	22 J	9 U	9 U	9 U
Iron	31 U	31 U	31 U	31 U	1130	979	23700	128	31 U	31 U
Lead	1 U	10 U	1 U	1 J	12 J	1 J	10 J	1 U	1 U	1 U
Magnesium	10500	10200	74500	73900	73000	72500	50800	46500	99200	102000
Manganese	1300	1300	27	26	2180	2170	324	13 J	9 J	5 J
Mercury	0.2U	0.2U	0.2U	0.2U	0.2U	0.2U	0.2U	0.2U	0.2U	0.2U
Nickel	76	73	36 J	34 J	246	245	13 J	7 U	25 J	21 J
Potassium	75300	73600	17900	19800	74100	72300	5510	4980 J	21300	20600
Selenium	189 J*	161 J*	550 J*	686 J*	291 J*	181 J*	2 J	1 J	775 J*	890 J*
Silver	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Sodium	135000	133000	82200	84800	85800	84600	66600	66000	66500	64800
Thallium	20 U	20 U	20 U	2 U	20 U	2 J	2 U	20 U	20 U	20 U
Vanadium	5 J	5 J	27 J	24 J	153	148	108	53	14 J	14 J
Zinc	132	134	608	594	6160	6130	48	40	199	178

U - The material was analyzed for, but was not detected. The associated numerical value is the estimated detection limit.
J - The associated numerical value is an estimated quantity because quality control criteria were not met or concentrations reported were less than the CRQL.
* - Exceeds Maximum Contaminant Level (MCL) for Primary Drinking Water Standards.

TABLE 6 (Cont.)

SUMMARY OF INORGANIC ANALYSES - WELL WATER SAMPLES
MONSANTO CHEMICAL COMPANY, SODA SPRINGS, IDAHO
(ug/l)

	TW 40		SWG		Transfer Blank		Federal Maximum Contaminant Limit for Drinking Water
	Unfiltered	Filtered	Unfiltered	Filtered	Unfiltered	Filtered	
Aluminum	74 J	50 J	22 J	20 U	30 J	20 J	
Antimony	31 U	31 U	31 U	31 U	31 U	31 U	
Arsenic	7 J	5 J	4 U	4 U	4 U	4 U	50
Barium	46 J	46 J	108 J	105 J	3 U	3 U	1000
Beryllium	1 U	1 U	1 U	1 U	1 U	1 U	
Cadmium	5520*	5520*	5 U	11	10	7	10
Calcium	205000	197000	116000	114000	168 J	270 J	
Chromium	5 U	5 U	5 U	5 U	5 U	5 U	50
Cobalt	8 U	8 U	6 U	6 U	6 U	6 J	
Copper	10 J	10 J	9 U	9 U	9 U	9 U	
Iron	31 U	31 U	31 U	31 U	31 U	31 U	
Lead	1 U	1 U	1 U	1 J	1 J	1 J	50
Magnesium	100000	96400	61100	59900	115 J	90 U	
Manganese	1260	1220	5 U	5 J	5 U	5 U	
Mercury	0.5	0.4	0.2U	0.2U	0.2U	0.2U	2
Nickel	125	124	7 U	7 U	7 U	7 U	
Potassium	88700	83200	9960	9610	111 U	111 U	
Selenium	359 J*	375 J*	20 U	20 U	4 J	2 U	10
Silver	5 U	5 U	5 U	5 U	5 U	5 U	50
Sodium	266000	256000	14200	14300	1500 U	1500 U	
Thallium	2 U	43 J	2 U	2 U	2 U	2 U	
Vanadium	58	56	5 J	5 J	2 U	2 U	
Zinc	10200	9430	17 J	48	16 J	27	

U - The material was analyzed for, but was not detected. The associated numerical value is the estimated detection limit.
J - The associated numerical value is an estimated quantity because quality control criteria were not met or concentrations reported were less than the CRQL.
* - Exceeds Maximum Contaminant Level (MCL) for Primary Drinking Water Standards.

TABLE 7

SUMMARY OF COMPOUNDS DETECTED AT ELEVATED[1] LEVELS IN UNFILTERED GROUND AND SURFACE WATER SAMPLES MONSANTO CHEMICAL COMPANY, SODA SPRINGS, IDAHO
(ug/l)

Compound	Background Value TW 15	PW 1	PW 2	PW 3	TW 17	TW 22	TW 36	TW 37	TW 38	TW 39	TW 40	MS	ED
Aluminum	34 J							1260	9990				111 J
Arsenic	4 U							25	12				
Cadmium	5 U	88				41	57	781			5520		32
Chromium	5 U							34					
Iron	31 U							1130	23700				100
Manganese	5 U				1320	1300	27	2180	324		1260		
Nickel	7 U					76	36 J	246		25 J	125		
Potassium	2700 J		4830 J			75300	17900	74100			88700		
Selenium	1 UR	19 J				189 J	550 J	291 J		775 J	359 J	91 J	17 J
Sodium	8380				90800	135000		85800			266000		
Vanadium	2 J			38 J			27 J	153	108		58	23 J	33 J
Zinc	13 U	112				132	608	6160		199	10200	122	
Sulfate[2]	34					940		400			640		
Fluoride[2]	1.0				17			22					
Total Phosphorous[2]	0.04	2.2						4.5			3.9		1.8

U - The material was analyzed for, but was not detected. The associated numerical value is the estimated detection limit.
J - The associated numerical value is an estimated quantity because quality control criteria were not met or concentrations reported were less than the CRQL.
R - Quality Control indicates that data are unusable (compound may or may not be present). Resampling and reanalysis are necessary for verification.
* - Exceeds Maximum Contaminant Level (MCL) for Primary Drinking Water Standards.
1 - Defined as greater than or equal to 10 times background value, or 3 times detection limit if undetected in background sample.
2 - Concentrations reported in mg/l.

The transfer blank samples contained several contaminants at low concentrations (Table 6). Eight were detected in the unfiltered blank and six in the filtered. The source of the contaminants is not known. To preserve the integrity of the data, all values less than three times the level found in the blanks were considered suspect. None of these suspected values are reported in Table 7, or considered further.

13.2.2 Sediment, Pond, and Surface Water Sample

Table 8 presents the analyses for the aqueous samples from the effluent discharge stream, the phossy water and seal water ponds, and Mormon Springs. Also included are results for the sediment samples from the former underflow pond and the coke and quartzite slurry pond. Sampling locations are presented in Figure 6.

The Mormon Springs sample (MS) contains selenium, vanadium, and zinc at elevated levels (see also Table 7). The concentration for selenium exceeded the MCL. The effluent discharge water, which originates from the production wells, contains aluminum, cadmium, iron, selenium, and vanadium at elevated levels. The concentration for cadmium is slightly above three times that detected in the transport blank. Therefore, the concentration reported may be suspect. However, prior sampling by Monsanto at the effluent discharge (2) detected cadmium at values similar to that reported here.

The elements detected in the ponds generally reflect the elements detected in the ground water samples. Generally, the highest elemental concentrations of all aqueous samples were reported in the sample from the phossy water surge pond (Sample P4 and Table 8). Sample P3 is from the seal water pond.

The sediment sample from the old underflow solids pond (P1) contains detectable concentrations of all TCL inorganics, excepting cobalt and beryllium. In comparison, the sample from the former coke and quartzite slurry pond (P2) contains detectable quantities of all but eight inorganics. Of those compounds detected, the concentrations were much lower in comparison to the old underflow solids pond. The site of the old underflow solids pond was identified as one of the sources of ground water contamination under the site (1).

13.3 Ion Analysis

Table 9 is a compilation of the results for the ion analyses. All analyses were performed on unfiltered samples.

Sulfate is present in all samples, with the background well having the lowest concentration. Samples that displayed elevated values were from TW 22, TW 37, and TW 40.

Fluoride was detected at elevated levels and also above the MCL in TW 17 and TW 22. Total phosphorous was detected at elevated levels in samples from PW-1, TW 37, TW 40, and the effluent discharge.

TABLE 8

SUMMARY OF INORGANIC ANALYSES - OTHER SAMPLES
MONSANTO CHEMICAL COMPANY, SODA SPRINGS, IDAHO

	Pond, Spring, and Effluent (ug/l)					Sediment Samples (mg/kg)	
			MS				
Element	P3	P4	Unfiltered	Filtered	ED	P1	P2
Aluminum	560	378	21 J	22 J	111 J	25900	3620
Antimony	31 U	31 U	31 U	31 U	31 U	79	7 U
Arsenic	40 U	147	4 U	4 U	4 U	248	1 U
Barium	20 J	23 J	66 J	67 J	69 J	159	46
Beryllium	1 U	1 U	1 U	1 U	1 U	0.3U	0.2U
Cadmium	49	16800	9	15	32	2140	8
Calcium	58500	77200	92500	92100	116000	202000	53600
Chromium	35	19	5 U	5 U	5 U	1220	44
Cobalt	6 U	12 J	6 U	6 U	6 U	2 U	1 U
Copper	9 U	53	9 U	9 U	9 U	144	20
Iron	1060	352	31 U	31 U	100	12400	3790
Lead	1 U	77	1 J	1 U	2 J	183	1
Magnesium	33200	16600	69300	68700	55800	7300	976
Manganese	30	924	5 U	6 J	5 U	149	36
Mercury	0.2U	0.2U	0.2U	0.2U	0.2U	0.3	0.1U
Nickel	14 J	259	9 J	12 J	7 U	215	20
Potassium	265000	69500	11400	11000	6960	17700	706
Selenium	20 U	5270 J	91 J*	77 J*	17 J*	430 J	4 J
Silver	13	5 U	5 U	5 U	5 U	73	1 U
Sodium	118000	74900	38400	38700	75400	6330	354 U
Thallium	2 U	4770 J	20 U	2 U	2 U	74	0.5U
Vanadium	29 J	590	23 J	27 J	33 J	2260	113
Zinc	1680	35400	122	144	44	15800	101

U - The material was analyzed for, but was not detected. The associated numerical value is the estimated detection limit.
J - The associated numerical value is an estimated quantity because quality control criteria were not met or concentrations reported were less than the CRQL.
* - Exceeds Maximum Contaminant Level (MCL) for Primary Drinking Water Standards.

TABLE 9

SUMMARY OF INORGANIC ANALYSES - IONS
MONSANTO CHEMICAL COMPANY, SODA SPRINGS, IDAHO

	Aqueous Samples (mg/l)											
Ion	PW 1	PW 2	PW 3	TW 15	TW 17	TW 22	TW 36	TW 37	TW 38	TW 39	TW 40	SWG
Sulfate	104	74	74	34	140	940	180	400	190	260	640	50
Fluoride	1.1	.30	.30	1.0	17*	6.1*	7.2*	22*	.4	5.6*	11*	1.0
Total Phosphorous	2.2	.37	.36	.04	1.5	.35	.31	4.5	.34	.29	3.9	.18
Hydrolyzable Phosphorous	.01U	.01	.01U	.01U	.05	.01U	.01U	.03	.02	.01	0.1U	.01U
Orthophosphate	.37	.01	.04	.01U	.06	.02	.01	.16	.01U	.01U	.52	.01

TABLE 9 (Cont.)

SUMMARY OF INORGANIC ANALYSES - IONS
MONSANTO CHEMICAL COMPANY, SODA SPRINGS, IDAHO

	Aqueous Samples (mg/l)				Soil Samples (mg/kg)	
Ion	MS	ED	P 3	P 4	P 1	P 2
Sulfate	68	89	400	1400	2000	1000
Fluoride	5*	1.7	36*	45*	45000	2500
Total Phosphorous	.32	1.8	252	6.5	.02	115
Hydrolyzable Phosphorous	.02	1.3	169	2.2	6.0	835
Orthophosphate	.04	.10	145	148	.79	.19

U - The material was analyzed for, but was not detected. The associated numerical value is the estimated detection limit.
J - The associated numerical value is an estimated quantity because quality control criteria were not met or concentrations reported were less than the CRQL.
* - Exceeds Maximum Contaminant Level (MCL) for Primary Drinking Water Standards.

Analyses for hydrolyzable phosphorous and orthophosphate were also performed. These analyses indicated the presence of other forms of phosphorous (possibly present as aqueous species) in concentrations typically well below the corresponding total phosphorous concentration, except in the two pond liquid samples.

The sediment sample from the old underflow solids pond was determined to contain 4.5 weight percent of fluoride, with much lesser concentrations of sulfate (2,000 mg/kg) and phosphorous (0.02 mg/kg). In comparison, the coke and quartzite slurry pond sediment contained less fluoride (0.25 wt%) and sulfate, but significantly more phosphorous (115 mg/kg).

13.4 Discussion

Elevated levels of TCL compounds were detected in the majority of the monitoring well samples, the effluent discharge sample, Mormon Springs, and two production wells. TCL compounds detected include cadmium, manganese, nickel, potassium, selenium, sodium, vanadium, and zinc. In addition, fluoride, sulfate, and phosphorous were detected at elevated concentrations in several monitoring wells. It is possible that the elevated levels of vanadium may result from a contaminant plume (identified in the Golder Associates Report) entering the site from the east.

Primary Drinking Water Standards are exceeded for either cadmium, selenium, and fluoride in several monitoring well samples PW1. PW1 was a partial source of drinking water for employees until 1984. Elevated levels of vanadium and potassium were detected in PW3 and PW2, respectively. Both are currently used to supply drinking water to site employees. However, no MCL currently exists for vanadium or potassium.

For ground water samples, the highest concentrations of analytes were generally detected in TW 37 and TW 40. These monitoring wells are installed immediately downgradient of the old underflow solids pond and hydroclarifier, which are two of the three sources of ground-water contamination identified in the Golder Associates Report (1). Analysis of the sediment from the old underflow solids pond, and of water in the phossy water surge pond and seal water pond indicated the presence of TCL compounds and ions that were also identified in the ground-water samples.

14.0 SUMMARY AND CONCLUSIONS

The MCC operates on elemental phosphorous plant in southeastern Idaho. The plant is within three miles of the City of Soda Springs, which has a spring-fed municipal water supply serving approximately 3,000 people. Ground water contamination under the Monsanto site was identified in a preliminary assessment conducted in 1984. A later report by Golder Associates in 1985 identified the sources of contaminants as a leaky hydroclarifier and several unlined ponds. Monsanto has

since discontinued use of the old ponds, installed new lined ponds, and replaced the old hydroclarifier.

During this investigation, several inorganic substances on the EPA's Target Compound List were identified at elevated levels in ground water under the site. Those compounds include cadmium, manganese, nickel, selenium, vanadium, and zinc. In general, no significant differences were observed between filtered and unfiltered ground water samples. Maximum Contaminant Levels for Primary Drinking Water Standards were exceeded in several wells for cadmium, selenium, and fluoride. Samples from an off-site spring and an effluent discharge stream contain elevated levels of cadmium, selenium, vanadium, and zinc. The effluent discharge stream enters Soda Creek, which is used downstream for irrigation of approximately 4,300 acres. Quality assurance samples revealed low-level contamination by several elements and consequently, the low concentrations of these compounds reported in some samples may be suspect.

REFERENCES

1. Golder Associates, 1985, Report on Hydrogeological Investigation, Soda Springs Plant Site (Volumes 1, 2, and 3); Prepared for the Monsanto Industrial Chemical Company.

2. Ecology and Environment, 1987, Monsanto--Soda Springs Plant, Site Inspection Field and Office Notes.

3. U.S. Geological Survey, 1984, Soda Springs, Idaho, Quadrangle, 15 Minute Series.

4. Armstrong, F.C., 1969, Geologic Map of the Soda Springs Quadrangle, Southeastern Idaho; U.S. Geological Survey, Miscellaneous Geological Investigations, Map I-557.

5. Dion, N.P., 1974, An Estimate of Leakage from Blackfoot Reservoir to Bear River Basin, Southeastern Idaho; Prepared by the U.S. Geological Survey in cooperation with Idaho Department of Water Administration; Water Information Bulletin No. 34, p. 24.

6. U.S. Department of Commerce, June 1968, Climatic Atlas of the United States.

7. U.S. Department of Commerce, 1963, Technical Paper No. 40, Rainfall Frequency Atlas of the United States.

8. Gary Jensen, Public Works Director, Soda Springs; Personal Communication, March 16, 1987.

9. State of Idaho, Department of Water Resources, Water Rights Abstract.

10. _____, Department of Water Resources, Well and Drillers Logs.

APPENDIX A

PHOTOGRAPHIC DOCUMENTATION

PHOTO IDENTIFICATION SHEET

TYPE OF CAMERA: CANON AE-1/3289855

TYPE OF FILM: ED 135-20/KR 135-20

TDD NO.: F10-8702-06

SITE NAME: Monsanto Chemical Company

Frame No.	Roll No.	Date	Time	Taken By	Witnessed By	Direction and Description of Photo
1	1	03-23-87	1000	Jeffrey Whidden	George Brooks	Northwest; northwest pond.
2	1	03-23-87	1005	Jeffrey Whidden	George Brooks	East; landfill #7 - contains office waste, construction debris, and asbestos.
3	1	03-23-87	1010	Jeffrey Whidden	George Brooks	Northeast; asbestos burial site within landfill #7.
4	1	03-23-87	1015	Jeffrey Whidden	George Brooks	West; lined underflow solids ponds (used as backup).
5	1	03-23-87	1020	Jeffrey Whidden	George Brooks	South; holding pond.
8	1	03-23-87		Jeffrey Whidden	George Brooks	Northwest; former lined underflow solids pond. To be filled with slag in future.
10	1	03-23-87		Jeffrey Whidden	George Brooks	North; former landfill #5 area.
11	1	03-23-87		Jeffrey Whidden	George Brooks	Northeast; drum storage area.
13	1	03-23-87	1100	Jeffrey Whidden	George Brooks	East; salvage yard.


1


2


3


4

#5 S

F10-8702-06

3-23-87

Holding Pond


5

#8 NW F10-8702-06

3-23-87

Former lined, underflow solids ponds will be filled w/ slag.


8

#10 N F10-8702-06

3-23-87

Former Landfill #5 area. Contains asbestos


10

#11 NE F10-8702-06

3-23-87

Drum storage Area (all drums are empty)


11


13

APPENDIX B

SITE INSPECTION REPORT FORM
(EPA FORM 2070-13)

FOR
MONSANTO CHEMICAL COMPANY

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 1 - SITE LOCATION AND INSPECTION INFORMATION

I. IDENTIFICATION

01 STATE ID	02 SITE NUMBER
	D081830994

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER
Monsanto - Soda Springs Plant	Highway 34

03 CITY	04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE	08 CONG DIST
Soda Springs	ID	83276	Caribou	029	02

09 COORDINATES LATITUDE	LONGITUDE
42° 41' 22.3"	111° 34' 54.8"

10 TYPE OF OWNERSHIP (Check one)
X A. PRIVATE ___B. FEDERAL _____ ___C. STATE ___D.COUNTY ___E. MUNICIPAL
___F. OTHER _____ ___G.UNKNOWN

III. INSPECTION INFORMATION

01 DATE OF INSPECTION	02 SITE STATUS	03 YEARS OF OPERATION		
3/23/87	X ACTIVE	1952	Present	___UNKNOWN
MO/DAY/YR	___INACTIVE	BEGINNING YEAR	ENDING YEAR	

04 AGENCY PERFORMING INSPECTION (Check all that apply)
___A. EPA X B. EPA CONTRACTOR Ecology & Environment, Inc. (Name of firm) ___C. MUNICIPAL ___D. MUNICIPAL CONTRACTOR _____ (Name of firm)
___E. STATE ___F. STATE CONTRACTOR _____ (Name of firm) ___G. OTHER _____ (Specify)

05 CHIEF INSPECTOR	06 TITLE	07 ORGANIZATION	08 TELEPHONE NO.
Jeffrey Whidden	Site Manager	E&E/FIT	(206) 624-9537
09 OTHER INSPECTORS	**10 TITLE**	**11 ORGANIZATION**	**12 TELEPHONE NO.**
George Brooks	Project Manager	E&E/FIT	(206) 624-9537
Thomas Colligan	Team Member	E&E/FIT	(206) 624-9537
Gerald Lee	Team Member	E&E/FIT	(206) 624-9537
13 SITE REPRESENTATIVES INTERVIEWED	**14 TITLE**	**15 ADDRESS**	**16 TELEPHONE NO.**
Tim Oliver	Senior Engineer	Monsanto Chemical Co. Hwy 34, Soda Springs, ID	(208)547-3391
Robert Geddes	Env. Engineer	Monsanto Chemical Co. Hwy 34, Sode Springs, ID	(208)547-3391

17 ACCESS GAINED BY (Check one)	18 TIME OF INSPECTION	19 WEATHER CONDITIONS
X PERMISSION ___ WARRANT	0800 - 1100	Cloudy, 40s

IV. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NO.
William Glasser	USEPA, Region X, Superfund	(206)442-7215

04 PERSON RESPONSIBLE FOR SITE INSPECTION FORM	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NO.	08 DATE
Thomas H. Colligan	EPA/FIT	E&E, Inc.	(206)624-9537	3/31/88

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 2 – WASTE INFORMATION

I. IDENTIFICATION	
01 STATE ID	02 SITE NUMBER D081830994

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)

- X A. SOLID
- ___ B. POWDER, FINES
- ___ C. SLUDGE
- ___ D. OTHER _____ (Specify)
- ___ E. SLURRY
- X F. LIQUID
- ___ G. GAS

02 WASTE QUANTITY AT SITE (Measures of waste quantities must be independent)

- TONS: _____
- CUBIC YARDS: approx. 16 x 10^6
- NO. OF DRUMS: _____

03 WASTE CHARACTERISTICS (Check all that apply)

- X A. TOXIC
- ___ B. CORROSIVE
- ___ C. RADIOACTIVE
- X D. PERSISTENT
- ___ E. SOLUBLE
- ___ F. INFECTIOUS
- ___ G. FLAMMABLE
- ___ H. IGNITABLE
- ___ I. HIGHLY VOLATILE
- ___ J. EXPLOSIVE
- ___ K. REACTIVE
- ___ L. INCOMPATIBLE
- ___ M. NOT APPLICABLE

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE			
OLW	OILY WASTE	Unknown	--	Disposed on facility roads prior to 1977
SOL	SOLVENTS	Unknown	--	Disposed on facility roads prior to 1974
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS			
IOC	INORGANIC CHEMICALS	550	lbs.	Asbestos waste
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS	Unknown	--	Heavy metals in slag pile, ground water, and ferrophos waste

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
MES	Vanadium Pentoxide	1314-62-1	On-site landfill	Unknown	--
IOC	Asbestos		On-site landfill	550	lbs.
OCC	PCB Filter	--	On-site landfill drums	Unknown	--
MES	Cadmium	7440-38-2	Detected in ground water	786	µg/l
MES	Selenium	--	Detected in ground water	686	µg/l
MES	Arsenic	7440-38-2	Detected in ground water	31	µg/l
MES	Chromium	7440-47-3	Detected in ground water	34	µg/l
MES	Nickel	7440-02-0	Detected in ground water	246	µg/l
MES	Vanadium	--	Detected in ground water	153	µg/l

V. FEEDSTOCKS (See Appendix for CAS Numbers)

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

E&E Site Inspection, 3/23/87.
E&E Sampling Program, 11/3-4/87.

POTENTIAL HAZARDOUS WASTE SITE

EPA SITE INSPECTION REPORT

PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE ID	02 SITE NUMBER D081830994

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 X A. GROUND WATER CONTAMINATION — 02 X OBSERVED (DATE: 11/3/87) ___ POTENTIAL ___ ALLEGED

03 POPULATION POTENTIALLY AFFECTED: 3000 — 04 NARRATIVE DESCRIPTION

Elevated levels of cadmium, selenium, arsenic, chromium, nickel, vanadium, sulfate, fluoride, and phosphorus exist in ground water under the site.

01 X B. SURFACE WATER CONTAMINATION — 02 X OBSERVED (DATE: 11/3/87) ___ POTENTIAL ___ ALLEGED

03 POPULATION POTENTIALLY AFFECTED: 0 — 04 NARRATIVE DESCRIPTION

Mormon Springs, 1/4 mile downgradient of site, shows elevated levels of selenium, vanadium, and zinc. Mormon Springs has no known use.

01 X C. CONTAMINATION OF AIR — 02 ___ OBSERVED (DATE:) X POTENTIAL ___ ALLEGED

03 POPULATION POTENTIALLY AFFECTED: Unknown — 04 NARRATIVE DESCRIPTION

Facility operates under State Air Pollution Permitting.

01 X D. FIRE/EXPLOSIVE CONDITIONS — 02 ___ OBSERVED (DATE:) X POTENTIAL ___ ALLEGED

03 POPULATION POTENTIALLY AFFECTED: — 04 NARRATIVE DESCRIPTION

Elemental phosphorus oxidizes when exposed to air.

01 X E. DIRECT CONTACT — 02 ___ OBSERVED (DATE:) X POTENTIAL ___ ALLEGED

03 POPULATION POTENTIALLY AFFECTED: — 04 NARRATIVE DESCRIPTION

(See worker exposure)

01 X F. CONTAMINATION OF SOIL — 02 ___ OBSERVED (DATE:) ___ POTENTIAL X ALLEGED

03 AREA POTENTIALLY AFFECTED: Unknown (Acres) — 04 NARRATIVE DESCRIPTION

Facility roads sprayed with waste oil and solvents prior to 1976.

01 X G. DRINKING WATER CONTAMINATION — 02 ___ OBSERVED (DATE:) X POTENTIAL ___ ALLEGED

03 POPULATION POTENTIALLY AFFECTED: 400 — 04 NARRATIVE DESCRIPTION

An off-site domestic well is contaminated by fluoride and one on-site production well is contaminated by metals. Both wells presently unused for drinking water. Another on-site production well shows elevated levels of vanadium. This well water is used for on-site drinking supply. However, no drinking water standard exists for vanadium. Four hundred employees on site.

01 X H. WORKER EXPOSURE/INJURY — 02 ___ OBSERVED (DATE:) X POTENTIAL ___ ALLEGED

03 WORKERS POTENTIALLY AFFECTED: — 04 NARRATIVE DESCRIPTION

Contact with elemental phosphorus by workers.

01 ___ I. POPULATION EXPOSURE/INJURY — 02 ___ OBSERVED (DATE:) ___ POTENTIAL ___ ALLEGED

03 POPULATION POTENTIALLY AFFECTED: — 04 NARRATIVE DESCRIPTION

None reported, observed, or suspected.

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE ID	02 SITE NUMBER
	D081830994

II. HAZARDOUS CONDITIONS AND INCIDENTS (CONTINUED)

01 ___ J. DAMAGE TO FLORA — 02 ___ OBSERVED (DATE: _____) ___ POTENTIAL ___ ALLEGED

04 NARRATIVE DESCRIPTION

None reported, observed, or suspected.

01 ___ K. DAMAGE TO FAUNA — 02 ___ OBSERVED (DATE: _____) ___ POTENTIAL ___ ALLEGED

04 NARRATIVE DESCRIPTION (Include name(s) of species)

None reported, observed, or suspected.

01 ___ L. CONTAMINATION OF FOOD CHAIN — 02 ___ OBSERVED (DATE: _____) ___ POTENTIAL ___ ALLEGED

04 NARRATIVE DESCRIPTION

None reported, observed, or suspected.

01 _X_ M. UNSTABLE CONTAINMENT OF WASTES — 02 ___ OBSERVED (DATE: _____) _X_ POTENTIAL ___ ALLEGED

(Spills/runoff/standing liquids/leaking drums)

03 POPULATION POTENTIALLY AFFECTED: Unknown 04 NARRATIVE DESCRIPTION

Vanadium pentoxide in drums stored in landfill. Integrity of landfill containment is unknown.

01 ___ N. DAMAGE TO OFFSITE PROPERTY — 02 ___ OBSERVED (DATE: _____) ___ POTENTIAL ___ ALLEGED

04 NARRATIVE DESCRIPTION

None reported, observed, or suspected.

01 _X_ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs — 02 _X_ OBSERVED (DATE: 11/3/87) ___ POTENTIAL ___ ALLEGED

04 NARRATIVE DESCRIPTION

Plant discharges non-contact cooling water, derived from production wells, as effluent discharge to Soda Creek. Effluent discharge analyzed to contain elevated levels of cadmium, vanadium, selenium, and zinc. Discharge of cooling water permitted under NPDES for temperature. Soda Creek used for irrigation.

01 ___ P. ILLEGAL/UNAUTHORIZED DUMPING — 02 ___ OBSERVED (DATE: _____) ___ POTENTIAL ___ ALLEGED

04 NARRATIVE DESCRIPTION

None reported, observed, or suspected.

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

None reported, observed, or suspected.

III. TOTAL POPULATION POTENTIALLY AFFECTED: 3,400

IV. COMMENTS

The Soda Springs plant produces elemental phosphorus from phosphate ore. Ground water contamination under site apparently resulted from past disposal practices of process water into unlined ponds. Present-day ponds are lined.

V. SOURCES OF INFORMATION (Cite specific references. e.g., state files, sample analysis, reports)

E&E Site Inspection, 3/23/87
E&E Sampling Program, 11/3-4/87.
Hydrogeological Investigation, performed by Golder Associates, November 1985.

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 4 - PERMIT AND DESCRIPTIVE INFORMATION

I. IDENTIFICATION

01 STATE ID	02 SITE NUMBER
	D081830994

II. PERMIT INFORMATION

01 TYPE OF PERMIT ISSUED (Check all that apply)	02 PERMIT NUMBER	03 DATE ISSUED	04 EXPIRATION DATE	05 COMMENTS
X A. NPDES	ID-000119-8	07/20/77	9/21/87	
B. UIC				
X C. AIR	13-0420-0001-00	7/18/74	7/17/84	
D. RCRA				
E. RCRA INTERIM STATUS				
X F. SPCC PLAN	Unknown	6/15/86	6/15/87	
X G. STATE (Specify)	Unknown	--	--	On-site landfills permitted by state.
H. LOCAL (Specify)				
I. OTHER (Specify)				
J. NONE				

III. SITE DESCRIPTION

01 STORAGE/DISPOSAL (Check all that apply)	02 AMOUNT	03 UNIT OF MEASURE
X A. SURFACE IMPOUNDMENT	Approx. 3	Acres
X B. PILES	Approx. 100	Acres
X C. DRUMS, ABOVE GROUND	Unknown	
D. TANK, ABOVE GROUND		
E. TANK, BELOW GROUND		
X F. LANDFILL	Approx. 5	Acres
G. LANDFARM		
H. OPEN DUMP		
I. OTHER (Specify)		

04 TREATMENT (Check all that apply)

- A. INCINERATION
- B. UNDERGROUND INJECTION
- C. CHEMICAL/PHYSICAL
- D. BIOLOGICAL
- E. WASTE OIL PROCESSING
- F. SOLVENT RECOVERY
- G. OTHER RECYCLING/RECOVERY
- X H. OTHER (Specify) None

05 Other

X A. BUILDINGS ON SITE
Approx. 50

06 AREA OF SITE

530 (Acres)

07 COMMENTS

IV. CONTAINMENT

01 CONTAINMENT OF WASTES (Check one)

X A. ADEQUATE, SECURE B. MODERATE C. INADEQUATE, POOR D. INSECURE, UNSOUND, DANGEROUS

02 DESCRIPTION OF DRUMS, DIKING, LINERS, BARRIERS, ETC.

Present process water ponds are bermed and lined; prior to 1983 past ponds were unlined. Old hydroclarifier reportedly leaked and was replaced with new hydroclarifier with lined leachate collection system. All fuel storage tanks are above ground and have catchment basins, retention ponds, or earthen dike.

V. ACCESSIBILITY

01 WASTE EASILY ACCESSIBLE: YES X NO

02 COMMENTS

Site is fenced and access controlled by security personnel.

VI. SOURCES OF INFORMATION (Cite specific references, e.g. state files, sample analysis, reports)

E&E Site Inspection, 3/23/87
EPA CERCLA Site File, Monsanto Soda Springs Plant

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 STATE ID	02 SITE NUMBER
	D081830994

II. DRINKING WATER SUPPLY

01 TYPE OF DRINKING SUPPLY (Check as applicable)

	SURFACE	WELL
COMMUNITY	A. X	B. ___
NON-COMMUNITY	C. ___	D. X

02 STATUS

	ENDANGERED	AFFECTED	MONITORED
	A. ___	B. ___	C. X
	D. ___	E. ___	F. X

03 DISTANCE TO SITE

A. 3 (mi)
B. 0.25 (mi)

III. GROUND WATER

01 GROUND WATER USE IN VICINITY (Check one)

___ A. ONLY SOURCE FOR DRINKING
___ B. DRINKING (Other sources available)
___ C. COMMERCIAL, INDUSTRIAL IRRIGATION (Limited other sources available)
___ D. NOT USED, UNUSABLE

COMMERCIAL, INDUSTRIAL, IRRIGATION (No other water sources available)

02 POPULATION SERVED BY GROUND WATER > 3000

03 DISTANCE TO NEAREST DRINKING WATER WELL On Site (mi)

04 DEPTH TO GROUND WATER	05 DIRECTION OF GROUND WATER FLOW	06 DEPTH TO AQUIFER OF CONCERN	07 POTENTIAL YIELD OF AQUIFER	08 SOLE SOURCE AQUIFER
60 (ft)	SW	60 (ft)	Unknown (gpd)	___ YES X NO

09 DESCRIPTION OF WELLS (Including usage, depth, and location relative to population and buildings)

There are three production wells on-site, two of which supply drinking water to 400 plant employees. They are between 100 and 150 feet in depth. There are several domestic wells within three miles of the site serving an estimated population of 80.

10 RECHARGE AREA		11 DISCHARGE AREA	
X YES ___ NO	COMMENTS Downward hydraulic gradient over northern two-thirds of site.	X YES ___ NO	COMMENTS Upward hydraulic gradient over southern third of site.

IV. SURFACE WATER

01 SURFACE WATER USE (Check one)

X A. RESERVOIR, RECREATION DRINKING WATER SOURCE
___ B. IRRIGATION, ECONOMICALLY IMPORTANT RESOURCES
___ C. COMMERCIAL, INDUSTRIAL
___ D. NOT CURRENTLY USED

02 AFFECTED/POTENTIALLY AFFECTED BODIES OF WATER

NAME:	AFFECTED	DISTANCE TO SITE
Soda Creek	X	0.5 (mi)
	___	(mi)
	___	(mi)

V. DEMOGRAPHIC AND PROPERTY INFORMATION

01 TOTAL POPULATION WITHIN

ONE (1) MILE OF SITE	TWO (2) MILES OF SITE	THREE (3) MILES OF SITE
A. 27	B. 1400	C. 3100
NO. OF PERSONS	NO. OF PERSONS	NO. OF PERSONS

02 DISTANCE TO NEAREST POPULATION

0.2 (mi)

03 NUMBER OF BUILDINGS WITHIN TWO (2) MILES OF SITE

370

04 DISTANCE TO NEAREST OFF-SITE BUILDING

0.2 (mi)

05 POPULATION WITHIN VICINITY OF SITE (Provide narrative description of nature of population within vicinity of site, e.g., rural, village, densely populated urban area)

Site is located in rural western valley within three miles of a town of 3000. Scattered residences, industries, and trailer parks between town and site.

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 STATE ID	02 SITE NUMBER
	D081830994

II. ENVIRONMENTAL INFORMATION

01 PERMEABILITY OF UNSATURATED ZONE (Check one)

___A. 10^{-6} - 10^{-8} cm/sec ___B. 10^{-4} - 10^{-6} cm/sec _X_C. 10^{-4} - 10^{-3} cm/sec ___D. GREATER THAN 10^{-3} cm/sec

02 PERMEABILITY OF BEDROCK (Check one)

___A. IMPERMEABLE (Less than 10^{-6} cm/sec) ___B. RELATIVELY IMPERMEABLE (10^{-4} - 10^{-6} cm/sec) _X_C. RELATIVELY PERMEABLE (10^{-2} - 10^{-4} cm/sec) ___D. VERY PERMEABLE (Greater than 10^{-2} cm/sec)

03 DEPTH TO BEDROCK	04 DEPTH OF CONTAMINATED SOIL ZONE	05 SOIL pH	
Approx. 20 (ft)	n/a (ft)	Unknown	

06 NET PRECIPITATION	07 ONE YEAR 24-HOUR RAINFALL	08 SLOPE		
		SITE SLOPE	DIRECTION OF SITE SLOPE	TERRAIN AVERAGE SLOPE
-16 (in)	1.06 (in)	1 %	SW	< 1 %

09 FLOOD POTENTIAL
SITE IS IN n/a YEAR FLOOD PLAN

10
n/a SITE IS ON BARRIER ISLAND, COASTAL HIGH HAZARD AREA, RIVERINE FLOODWAY

11 DISTANCE TO WETLANDS (5 acre minimum)

ESTUARINE: A. n/a (mi) OTHER: B. n/a (mi)

12 DISTANCE TO CRITICAL HABITAT (of endangered species)

n/a (mi)

ENDANGERED SPECIES:

13 LAND USE IN VICINITY

DISTANCE TO:

COMMERCIAL/INDUSTRIAL	RESIDENTIAL AREAS; NATIONAL/STATE PARKS, FORESTS, OR WILDLIFE RESERVES	PRIME AG LAND	AGRICULTURAL LANDS AG LAND
A. Adjacent (mi)	B. 0.5 (mi)	C. (mi)	D. < 1 (mi)

14 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPOGRAPHY

Site lies in the floor of the Bear River Valley. The valley is approximately five miles wide and bordered by the Aspen Range and Soda Springs Hills, which rise several thousand feet above the valley floor.

VII. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

E&E Site Inspection, 3/23/87
USGS Topographic Map, Soda Springs, ID, 15 minute quad
U.S. Department of Commerce, Climatic Atlas of the United States, 1979

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 6 - SAMPLE AND FIELD INFORMATION

I. IDENTIFICATION	
01 STATE ID	02 SITE NUMBER D081830994

II. SAMPLES TAKEN

SAMPLE TYPE	01 NUMBER OF SAMPLES TAKEN	02 SAMPLES SENT TO	03 ESTIMATED DATE RESULTS AVAILABLE
GROUND WATER	12	Rocky Mountain Lab, Data Chem, Centec	February 1988
SURFACE WATER	2	Same as above	February 1988
WASTE	2	Same as above	February 1988
AIR			
RUNOFF			
SPILL			
SOIL			
VEGETATION			
OTHER			

III. FIELD MEASUREMENTS TAKEN

01 TYPE	02 COMMENTS
pH	Collected on ground-water samples
Conductivity	Collected on ground-water samples
Temperature	Collected on ground-water samples

IV. PHOTOGRAPHS AND MAPS

01 TYPE _X_ GROUND ___ AERIAL

02 IN CUSTODY OF EPA Region X Superfund
(Name of organization or individual)

03 MAPS
_X_ YES
___ NO

04 LOCATION OF MAPS
Ecology and Environment, Inc., Seattle

V. OTHER FIELD DATA COLLECTED (Provide narrative description)

None

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

E&E Sampling Program, 11/3-4/87.

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 7 - OWNER INFORMATION

I. IDENTIFICATION

01 STATE ID	02 SITE NUMBER
	D081830094

II. CURRENT OWNER(S) | **PARENT COMPANY (If applicable)**

01 NAME	02 D+B NUMBER	08 NAME	09 D+B NUMBER
Monsanto Chemical Co.		Monsanto Chemical Co.	
03 STREET ADDRESS (P.O. BOX, RFD #, ETC.)	04 SIC CODE	10 STREET ADDRESS (P.O. BOX, RFD #, ETC.)	11 SIC CODE
P.O. Box 816		800 N. Lindbergh Blvd.	
05 CITY / 06 STATE / 07 ZIP CODE		12 CITY / 13 STATE / 14 ZIP CODE	
Soda Springs / ID / 83276		St. Louis / MO / 63167	
01 NAME	02 D+B NUMBER	08 NAME	09 D+B NUMBER
03 STREET ADDRESS (P.O. BOX, RFD #, ETC.)	04 SIC CODE	10 STREET ADDRESS (P.O. BOX, RFD #, ETC.)	11 SIC CODE
05 CITY / 06 STATE / 07 ZIP CODE		12 CITY / 13 STATE / 14 ZIP CODE	
01 NAME	02 D+B NUMBER	08 NAME	09 D+B NUMBER
03 STREET ADDRESS (P.O. BOX, RFD #, ETC.)	04 SIC CODE	10 STREET ADDRESS (P.O. BOX, RFD #, ETC.)	11 SIC CODE
05 CITY / 06 STATE / 07 ZIP CODE		12 CITY / 13 STATE / 14 ZIP CODE	

III. PREVIOUS OWNER(S) (List most recent first) | **IV. REALTY OWNER(S)** (If applicable; list most recent first)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
		Vernal Hopkins	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
		81 North Main Street	
05 CITY / 06 STATE / 07 ZIP CODE		05 CITY / 06 STATE / 07 ZIP CODE	
		Soda Springs / ID / 83276	
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY / 06 STATE / 07 ZIP CODE		05 CITY / 06 STATE / 07 ZIP CODE	
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY / 06 STATE / 07 ZIP CODE		05 CITY / 06 STATE / 07 ZIP CODE	

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

E&E Site Inspection, 3/23/87

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 8 - OPERATOR INFORMATION

I. IDENTIFICATION	
01 STATE ID	02 SITE NUMBER D081830994

II. CURRENT OPERATOR (Provide if different from owner)			OPERATOR'S PARENT COMPANY (If applicable)		
01 NAME See previous page		02 D+B NUMBER	10 NAME		11 D+B NUMBER
03 STREET ADDRESS (P.O. BOX, RFD #, ETC.)		04 SIC CODE	12 STREET ADDRESS (P.O. BOX, RFD #, ETC.)		13 SIC CODE
05 CITY	06 STATE	07 ZIP CODE	14 CITY	15 STATE	16 ZIP CODE
08 YEARS OF OPERATION	09 NAME OF OWNER				

III. PREVIOUS OPERATOR(S) (List most recent first; provide only if different from owner)			PREVIOUS OPERATORS' PARENT COMPANIES (If applicable)		
01 NAME		02 D+B NUMBER	10 NAME		11 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE	12 STREET ADDRESS (P.O. Box, RFD #, etc.)		13 SIC CODE
05 CITY	06 STATE	07 ZIP CODE	14 CITY	15 STATE	16 ZIP CODE
08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD				
01 NAME		02 D+B NUMBER	10 NAME		11 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE	12 STREET ADDRESS (P.O. Box, RFD #, etc.)		13 SIC CODE
05 CITY	06 STATE	07 ZIP CODE	14 CITY	15 STATE	16 ZIP CODE
08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD				
01 NAME		02 D+B NUMBER	10 NAME		11 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE	12 STREET ADDRESS (P.O. Box, RFD #, etc.)		13 SIC CODE
05 CITY	06 STATE	07 ZIP CODE	14 CITY	15 STATE	16 ZIP CODE
08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD				

IV. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

E&E Site Inspection, 3/23/87

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 9 – GENERATOR/TRANSPORTER INFORMATION

I. IDENTIFICATION	
01 STATE ID	02 SITE NUMBER D081830994

II. ON-SITE GENERATOR

01 NAME	02 D+B NUMBER	
Monsanto Chemical Co.		
03 STREET ADDRESS (P.O. BOX, RFD #, ETC.)	04 SIC CODE	
P.O. Box 816		
05 CITY	06 STATE	07 ZIP CODE
Soda Springs	ID	83276

III. OFF-SITE GENERATOR(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE

IV. TRANSPORTER(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
Safety Kleen	D000712026	Rollins Environmental Service	D055141378
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
2610 Garrett Way		P.O. Box 609	
05 CITY / 06 STATE / 07 ZIP CODE		05 CITY / 06 STATE / 07 ZIP CODE	
Pocatello / ID		Deer Park / TX / 77536	
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

E&E Site Inspection, 3/23/87

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION

01 STATE ID	02 SITE NUMBER
	D081830994

II. PAST RESPONSE ACTIVITIES

01 X A. WATER SUPPLY CLOSED — 02 DATE 1984 — 03 AGENCY Monsanto Chemical Co.

04 DESCRIPTION
Production well PW 1 served as partial source of drinking water until it was discovered to be contaminated with cadmium. An off-site domestic well was also discovered to be contaminated and subsequently closed.

01 ___ B. TEMPORARY WATER SUPPLY PROVIDED — 02 DATE ____ — 03 AGENCY ____

04 DESCRIPTION
None

01 X C. PERMANENT WATER SUPPLY PROVIDED — 02 DATE 1984 — 03 AGENCY Monsanto Chemical Co.

04 DESCRIPTION
Municipal water supplied to one residence after their domestic well was discovered to be contaminated with fluoride.

01 ___ D. SPILLED MATERIAL REMOVED — 02 DATE ____ — 03 AGENCY ____

04 DESCRIPTION
None

01 ___ E. CONTAMINATED SOIL REMOVED — 02 DATE ____ — 03 AGENCY ____

04 DESCRIPTION
None

01 ___ F. WASTE REPACKAGED — 02 DATE ____ — 03 AGENCY ____

04 DESCRIPTION
None

01 ___ G. WASTE DISPOSED ELSEWHERE — 02 DATE ____ — 03 AGENCY ____

04 DESCRIPTION
None

01 ___ H. ON SITE BURIAL — 02 DATE ____ — 03 AGENCY ____

04 DESCRIPTION
None

01 ___ I. IN SITU CHEMICAL TREATMENT — 02 DATE ____ — 03 AGENCY ____

04 DESCRIPTION
None

01 ___ J. IN SITU BIOLOGICAL TREATMENT — 02 DATE ____ — 03 AGENCY ____

04 DESCRIPTION
None

01 ___ K. IN SITU PHYSICAL TREATMENT — 02 DATE ____ — 03 AGENCY ____

04 DESCRIPTION
None

01 ___ L. ENCAPSULATION — 02 DATE ____ — 03 AGENCY ____

04 DESCRIPTION
None

01 ___ M. EMERGENCY WASTE TREATMENT — 02 DATE ____ — 03 AGENCY ____

04 DESCRIPTION
None

01 ___ N. CUTOFF WALLS — 02 DATE ____ — 03 AGENCY ____

04 DESCRIPTION
None

01 ___ O. EMERGENCY DIKING/SURFACE WATER DIVERSION — 02 DATE ____ — 03 AGENCY ____

04 DESCRIPTION
None

01 ___ P. CUTOFF TRENCHES/SUMP — 02 DATE ____ — 03 AGENCY ____

04 DESCRIPTION
None

01 ___ Q. SUBSURFACE CUTOFF WALL — 02 DATE ____ — 03 AGENCY ____

04 DESCRIPTION
None

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION	
01 STATE ID	02 SITE NUMBER D081830994

II. PAST RESPONSE ACTIVITIES (Continued)

01 ___ R. BARRIER WALLS CONSTRUCTED — 02 DATE _____ — 03 AGENCY _____

04 DESCRIPTION
None

01 _X_ S. CAPPING/COVERING — 02 DATE 1989? — 03 AGENCY Monsanto Chemical Co.

04 DESCRIPTION
Old underflow solids pond to be covered with slag in future.

01 ___ T. BULK TANKAGE REPAIRED — 02 DATE _____ — 03 AGENCY _____

04 DESCRIPTION
None

01 ___ U. GROUT CURTAIN CONSTRUCTED — 02 DATE _____ — 03 AGENCY _____

04 DESCRIPTION
None

01 _X_ V. BOTTOM SEALED — 02 DATE 1985 — 03 AGENCY Monsanto Chemical Co.

04 DESCRIPTION
Bottom of phossy water ponds and new underflow solids pond lined with bentonite.

01 ___ W. GAS CONTROL — 02 DATE _____ — 03 AGENCY _____

04 DESCRIPTION
None

01 ___ X. FIRE CONTROL — 02 DATE _____ — 03 AGENCY _____

04 DESCRIPTION
None

01 ___ Y. LEACHATE TREATMENT — 02 DATE _____ — 03 AGENCY _____

04 DESCRIPTION
None

01 ___ Z. AREA EVACUATED — 02 DATE _____ — 03 AGENCY _____

04 DESCRIPTION
None

01 ___ 1. ACCESS TO SITE RESTRICTED — 02 DATE _____ — 03 AGENCY _____

04 DESCRIPTION
None

01 ___ 2. POPULATION RELOCATED — 02 DATE _____ — 03 AGENCY _____

04 DESCRIPTION
None

01 _X_ 3. OTHER REMEDIAL ACTIVITIES — 02 DATE 1985 — 03 AGENCY Monsanto Chemical Co.

04 DESCRIPTION

Old hydroclarifier leaked in past. Replaced with new hydroclarifier and a leachate collection system and synthetic liner.

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

E&E Site Inspection, 3/23/87

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 11 - ENFORCEMENT INFORMATION

I. IDENTIFICATION	
01 STATE ID	02 SITE NUMBER D081830994

II. ENFORCEMENT INFORMATION

01 PAST REGULATORY/ENFORCEMENT ACTION ___YES X NO

02 DESCRIPTION OF FEDERAL, STATE, LOCAL REGULATORY/ENFORCEMENT ACTION

None reported

III. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

E&E Site Inspection, 3/23/87

APPENDIX C

EPA TARGET COMPOUND LIST (TCL)

ANALYTICAL PROTOCOLS

The standardized organic analytical methods are based on Federal Register Methods 625 (B/N/A), 608 (pesticide), 624 (VOA), EPA Methods for Chemical Analysis of Water and Wastes (MCAWW), and Test Methods for Evaluating Solid Wastes (SW-846) modified for CLP use in the analysis of both water and soil samples.

TABLE C-1

ORGANICS ANALYSES

	Volatile Compounds (VOA)	Contract Required Quantitation Limits * Low Concentration Water[a] (ug/l)	Low Concentration Soil/Sediment[b] (ug/kg)
1.	Chloromethane	10	10
2.	Bromomethane	10	10
3.	Vinyl Chloride	10	10
4.	Chloroethane	10	10
5.	Methylene Chloride	5	5
6.	Acetone	10	10
7.	Carbon Disulfide	5	5
8.	1,1-Dichloroethene	5	5
9.	1,1-Dichloroethane	5	5
10.	trans-1,2-Dichloroethene	5	5
11.	Chloroform	5	5
12.	1,2-Dichloroethane	5	5
13.	2-Butanone	10	10
14.	1,1,1-Trichloroethane	5	5
15.	Carbon Tetrachloride	5	5
16.	Vinyl Acetate	10	10
17.	Bromodichloromethane	5	5
18.	1,2-Dichloropropane	5	5
19.	trans-1,3-Dichloropropene	5	5
20.	Trichloroethene	5	5
21.	Dibromochloromethane	5	5
22.	1,1,2-Trichloroethane	5	5
23.	Benzene	5	5
24.	cis-1,3-Dichloropropene	5	5
25.	2-Chloroethylvinylether	10	10
26.	Bromoform	5	5
27.	2-Hexanone	10	10
28.	4-Methyl-2-Pentanone	10	10
29.	Tetrachloroethene	5	5
30.	1,1,2,2-Tetrachloroethane	5	5
31.	Toluene	5	5
32.	Chlorobenzene	5	5
33.	Ethyl Benzene	5	5
34.	Styrene	5	5
35.	Total Xylenes	5	5

TABLE C-1 (CONT.)

	Semi-Volatile Compounds (VOA)	Contract Required Quantitation Limits * Low Concentration Water[c] (ug/l)	Low Concentration Soil/Sediment[d] (ug/kg)
1.	Phenol	10	330
2.	bis(-2-Chloroethyl)Ether	10	330
3.	2-Chlorophenol	10	330
4.	1,3-Dichlorobenzene	10	330
5.	1,4-Dichlorobenzene	10	330
6.	Benzyl Alcohol	10	330
7.	1,2-Dichlorobenzene	10	330
8.	2-Methylphenol	10	330
9.	bis(2-Chloroisopropyl)Ether	10	330
10.	4-Methylphenol	10	330
11.	N-Nitroso-Di-n-propylamine	10	330
12.	Hexachloroethane	10	330
13.	Nitrobenzene	10	330
14.	Isophorone	10	330
15.	2-Nitrophenol	10	330
16.	2,4-Dimethylphenol	10	330
17.	Benzoic Acid	50	1600
18.	bis(2-Chloroethoxy)Methane	10	330
19.	2,4-Dichlorophenol	10	330
20.	1,2,4-Trichlorobenzene	10	330
21.	Naphthalene	10	330
22.	4-Chloroanaline	10	330
23.	Hexachlorobutadiene	10	330
24.	4-Chloro-3-Methylphenol	10	330
25.	2-Methylnaphthalene	10	330
26.	Hexachlorocyclopentadiene	10	330
27.	2,4,6-Trichlorophenol	10	330
28.	2,4,5-Trichlorophenol	50	1600
29.	2-Chloronaphthalene	10	330
30.	2-Nitroanaline	50	1600
31.	Dimethyl Phthalate	10	330
32.	Acenaphthylene	10	330
33.	3-Nitroaniline	50	1600
34.	Acenaphthene	10	330
35.	2,4-Dinitrophenol	50	1600

TABLE C-1 (CONT.)

	Semi-Volatile Compounds (VOA)	Contract Required Quantitation Limits * Low Concentration Water[c] (ug/l)	Low Concentration Soil/Sediment[d] (ug/kg)
36.	4-Nitrophenol	50	1600
37.	Dibenzofuran	10	330
38.	2,4-Dinitrotoluene	10	330
39.	2,6-Dinitrotoluene	10	330
40.	Diethylphthalate	10	330
41.	4-Chlorophenyl-phenylether	10	330
42.	Fluorene	10	330
43.	4-Nitroaniline	50	1600
44.	4,6-Dinitro-2-Methylphenol	50	1600
45.	N-Nitrosodiphenylamine	10	330
46.	4-Bromophenyl-phenylether	10	330
47.	Hexachlorobenzene	10	330
48.	Pentachlorophenol	50	1600
49.	Phenathrene	10	330
50.	Anthracene	10	330
51.	Di-n-Butylphthalate	10	330
52.	Fluoranthene	10	330
53.	Pyrene	10	330
54.	Butylbenzylphthalate	10	330
55.	3,3'-Dichlorobenzidine	20	660
56.	Benzo(a)Anthracene	10	330
57.	bis(2-Ethylhexyl)Phthalate	10	330
58.	Chrysene	10	330
59.	Di-n-Octyl Phthalate	10	330
60.	Benzo(b)Fluoranthene	10	330
61.	Benzo(k)Fluoranthene	10	330
62.	Benzo(a)Pyrene	10	330
63.	Indeno(1,2,3-cd)Pyrene	10	330
64.	Dibenz(a,h)Anthracene	10	330
65.	Benzo(g,h,i)Perylene	10	330

TABLE C-1 (CONT.)

Pesticide / PCB Compounds	Contract Required Quantitation Limits * Low Concentration Water[e] (ug/l)	Low Concentration Soil/Sediment[f] (ug/kg)
1. Alpha-BHC	.05	8
2. Beta-BHC	.05	8
3. Delta-BHC	.05	8
4. Gamma-BHC (Lindane)	.05	8
5. Heptachlor	.05	8
6. Aldrin	.05	8
7. Heptachlor Epoxide	.05	8
8. Endosulfan I	.05	8
9. Dieldrin	.1	16
10. 4,4'-DDE	.1	16
11. Endrin	.1	16
12. Endosulfan II	.1	16
13. 4,4'-DDD	.1	16
14. Endosulfan Sulfate	.1	16
15. 4,4'-DDT	.1	16
16. Methoxychlor	.5	80
17. Endrin Ketone	.1	16
18. Chlordane	.5	80
19. Toxaphene	1.0	160
20. AROCLOR-1016	.5	80
21. AROCLOR-1221	.5	80
22. AROCLOR-1232	.5	80
23. AROCLOR-1242	.5	80
24. AROCLOR-1248	.5	80
25. AROCLOR-1254	1.0	160
26. AROCLOR-1260	1.0	160

* Specific quantitation limits are highly matrix dependent. The quantitation limits listed herein are provided for guidance and may not always be achievable.

a Medium Water Contract Required Quantitation Limits (CRQL) for Volatile TCL Compounds are 100 times the individual Low Water CRQL.

b Medium Soil/Sediment Contract Required Quantitation Limits (CRQL) for Volatile TCL Compounds are 100 times the individual Low Soil/Sediment CRQL.

TABLE C-1 (CONT.)

c Medium Water Contract Required Quantitation Limits (CRQL) for Semi-volatile TCL Compounds are 100 times the individual Low Water (CRQL).

d Medium Soil/Sediment Contract Required Quantitation Limits (CRQL) for Semi-volatile TCL Compounds are 60 times the individual Low Soil/ Sediment (CRQL).

e Medium Water Contract Required Quantitation Limits (CRQL) for Pesticide/PCB TCL Compounds are 100 times the individual Low Water (CRQL).

f Medium Soil/Sediment Contract Required Quantitation Limits (CRQL) for Pesticide/PCB TCL Compounds are 60 times the individual Low Soil/ Sediment (CRQL).

TABLE C-2

INORGANIC ANALYSES

Element	Contract Required Quantitation Limits * Low Concentration Water (ug/l)
Aluminum	200
Antimony	60
Arsenic	10
Barium	200
Beryllium	5
Cadmium	5
Calcium	5000
Chromium	10
Cobalt	50
Copper	25
Iron	100
Lead	5
Magnesium	5000
Manganese	15
Mercury	0.2
Nickel	40
Potassium	5000
Selenium	5
Silver	10
Sodium	5000
Thallium	10
Vanadium	50
Zinc	20
Cyanide	10

* Specific detection limits are highly matrix dependent. The quantitation limits listed herein are provided for guidance and may not always be achievable.

APPENDIX D

QUALITY ASSURANCE MEMORANDA

ecology and environment, inc.

101 YESLER WAY, SEATTLE, WASHINGTON, 98104, TEL. 206/624-9537

International Specialists in the Environment

TDD

MEMORANDUM

DATE: January 15, 1988

TO: John Osborn, FIT-RPO, USEPA, Region X

FOR: Joyce Crosson, RSCC, USEPA, Region X

THRU: for David Buecker, FIT-OM, E&E, Seattle

FROM: Lila Accra, Chemist, E&E, Seattle
Andrew Hafferty, Senior Chemist, E&E, Seattle

SUBJ: QA of Case 8383 (Inorganics)
Monsanto

REF: F10-8702-06

CC: Raleigh Farlow, DPO-ESD, USEPA, Region X
Gerald Muth, DPO, Region X Laboratory, Manchester
John Tilstra, DPO, USEPA, Region VIII
Deborah Flood, HWD-SM, USEPA, Region X
Jeffrey Whidden, E&E, Seattle

The Quality Assurance review of two samples, Case 8383, collected from Monsanto, has been completed. Two soil samples were analyzed at low level for TCL Inorganics by Rocky Mountain Analytical Laboratory of Arvada, California. The samples were numbered:

MJB-573 MJB-574

Data Qualifications

The following comments refer to the laboratory performance in meeting the Quality Control specifications outlined in IFB WA 87-K-025--027.

1) Timeliness - Acceptable

Samples were collected on November 4, 1987 and were digested for AA and ICP analyses on November 20. The AA and ICP analyses were performed on December 8 and 9, 1987. The samples were digested for mercury analysis on November 30, and were analyzed for mercury on December 1, 1987.

2) Initial Calibration - Acceptable

All ICP results fell within the control limits of 90-110% of the true values. All furnace AA results fell within the control limits of 90-110% of the true values for all analytes. Tin and mercury fell within the control limits of 80-120% of the true values.

3) Continuing Calibration - Acceptable

All ICP results fell within the control limits of 90-110% of the true values. All furnace AA results fell within the control limits of 90-110% of the true values for all analytes. Tin and mercury fell within the control limits of 80-120% of the true values. Note: The low standards for the AA calibration curves for selenium and lead analysis were at a concentration of 10 ppb. The current Statement of Work (SOW No. 787) requires that the low standard for AA calibration curves be at Contract Required Detection Limits (CRDL). CRDL for both of these elements is 5 ug/L. No action was taken.

4) Instrument Detection Limits - Acceptable

All Instrument Detection Limits (IDL) are lower than the CRDL.

5) Blanks - Acceptable

The concentration of aluminum in the Preparation Blank was greater than the IDL, but below CRDL.

Blank Number	Element	Concentration ug/l	CRQL ug/l
PB	Aluminum	9.6	200

Since the concentration of aluminum is not over the CRDL, no action was taken.

6) ICP Interference Check - Acceptable

All parameters for the Interference Check Sample were within the control limits of 80-120% of the true value.

7) Laboratory Control Sample - Acceptable

Recoveries for all parameters for both ICP and AA analysis were within the control limits required by SOW No. 787.

8) Duplicate Sample Analysis

Relative Percent Difference (RPD) for selenium exceeded QC limits.

Sample	Matrix	Element	RPD	QC Limits
MJB-573	Soil	Selenium	102%	20%

Therefore, selenium results for furnace AA soil analysis are flagged as estimated (J), although the qualitative presence of the analyte is confirmed.

9) Spiked Sample Analysis - Acceptable

Matrix spike recoveries for all elements were within the QC limits of 75-125%.

10) ICP Serial Dilution - Acceptable

All parameters for the ICP Serial dilution were within the control limits of less than 20% RPD.

11) Furnace AA - Acceptable

All Furnace AA results were within QC limits.

12) Mercury Analysis - Acceptable

All Mercury results were within QC limits.

13) Cyanide Analysis - NR

14) Sample Analysis

A CRDL standard sample was analyzed.

The Standard Addition final concentration calculations are in error by a factor of 20 on the Standard Addition Results sheets in both the raw data section and on form VIII for arsenic, selenium, and thallium. However, raw data sheets for AA analysis and final sample concentrations reported on Form I are calculated correctly. Therefore, no action was taken.

Data Use

The usefulness of the data is based on the criteria outlined in the "Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses" (R-582-5-5-01).

Upon consideration of the above comments, the data is ACCEPTABLE for use except where flagged with data qualifiers which modify the usefulness of individual values.

Additional data packages associated with this project are expected from CLP or EPA laboratories.

Data Qualifiers

U - The material was analyzed for, but was not detected. The associated numerical value is an estimated sample quantitation limit.

J - The associated numerical value is an estimated quantity because quality control criteria were not met or concentrations reported were less than the CRQL.

R - Quality Control indicates that data are unusable (compound may or may not be present). Resampling and reanalysis are necessary for verification.

Q - No analytical result.

N - Presumptive evidence of presence of material (tentative identification).

B - The element was found in the laboratory blank as well as the sample.

M - Mass spectral criteria for positive identification were not met. However, in the opinion of the laboratory, the identification is correct based on the analyst's professional judgement.

F - Concentration of this element exceeds either the Primary or Secondary Drinking Water Standard listed in the Safe Drinking Water Act of 1974.

INO/870206 (for WP USE ONLY)

ecology and environment, inc.

101 YESLER WAY, SEATTLE, WASHINGTON, 98104, TEL. 206/624-9537

International Specialists in the Environment

MEMORANDUM

DATE: January 27, 1988

TO: John Osborn, FIT-RPO, USEPA, Region X

FOR: Joyce Crosson, RSCC, USEPA, Region X

THRU: David Buecker, FIT-OM, E&E, Seattle

FROM: James Herndon, Chemist, E&E, Seattle
Andrew Hafferty, Senior Chemist, E&E, Seattle

SUBJ: QA of Case 8383 (Organics)
Monsanto Chemical

REF: [redacted]

CC: Raleigh Farlow, ESD-DPO, USEPA, Region X
Gerald Muth, DPO, USEPA, Region X Laboratory
John Osborn, ESD-PO, USEPA, Region X
Deborah Flood, HWD-SM, USEPA, Region X
Jeff Whidden, FIT-PO, E&E, Seattle

This is a resubmittal of the Quality Assurance package of Case 8383 as per the instructions of Raleigh Farlow, ESD-DPO, USEPA, Region X on 12/29/87.

The Quality Assurance review of four samples, Case 8383, collected from Monsanto Chemical, has been completed. Four water samples were analyzed at low level for Volatiles, Semivolatiles and Pesticides/PCBs by Data Chem Inc., of Salt Lake City, Utah. The samples were numbered:

JC-754	JC-756
JC-755	JC-757

Data Qualifications

The following comments refer to the laboratory performance in meeting the Quality Control Specifications outlined in IFB WA - 87K236-238.

1) Timeliness - Acceptable

Sample Number	Sample Date	Recd. Date	VOA Anal.	BNA Extr.	BNA Anal.	PEST Extr.	PEST Anal.
JC-754	11-03	11-05	11-08	11-06	11-10	11-05	11-11
JC-755	11-03	11-05	11-08	11-06	11-10	11-05	11-11
JC-756	11-03	11-05	11-11	11-06	11-10	11-05	11-11
JC-757	11-03	11-05	11-09	11-06	11-10	11-05	11-11

2) Instrument Tuning - Acceptable

All tuning check compound mass abundances and ratios were within contract required limits.

The rounding method used when transferring the relative intensity (RI) data from the raw BFB and DFTPP spectra listings to the tuning form is inconsistent. The BFB spectra of 10/29/87 had mass 176 with an RI of 83.03 rounded to 83.1. The BFB spectra of 11/8/87 had mass 96 with an RI of 8.99 rounded to 8.9. Several more examples of the inconsistency were found.

3) Initial Calibration - Acceptable

All SPCC and CCC compounds were within contract required limits.

The raw data sheets for the semivolatile compounds Benzoic acid, 2,4,5-Trichlorophenol, 2-Nitroaniline, 3-Nitroaniline, 4-Nitroaniline, 2,4-Dinitrophenol, 4-Nitrophenol, 4,6-Dinitro-2-methylphenol and Pentachlorophenol showed detection and generation of a Relative Response Factor (RRF) for the 20 ng standard runs on 10/21/87 and 11/24/87. These RRF were consistent with those generated by the standards run at higher concentrations on the same day but were not included in the initial calibration form. The exclusion did not adversely affect the Average Relative Response Factor (ARRF) or the Percent Relative Standard Deviation (%RSD) significantly.

The raw data sheets for the volatile initial calibration show the Methylene chloride and Acetone referenced to an non-internal standard compound for the calculation of Relative Response Factor (RRF) for all of the standard runs in the initial calibration of 10/29/87. The numbers on the raw data sheets were incorrect, but the numbers on the initial calibration form were the corrected RRF.

The following non-SPCC compounds had an Average Relative Response Factor (ARRF) less than 0.05 for semivolatiles and 0.300 for volatiles in the initial calibration.

Date	Compound	Fraction	ARRF
10-29	4-Chloroaniline	BNA	0.013
10-29	1,2-Dichloropropane	VOA	0.255
10-29	2-Butanone	VOA	0.029
10-29	4-Methyl-2-pentanone	VOA	0.290
11-10	2-Butanone	VOA	0.026
11-10	Acetone	VOA	0.059
11-10	Carbon disulfide	VOA	0.122
11-10	Vinyl acetate	VOA	0.198

ARRF = Average Relative Response Factor

The following non-CCC compounds had a Percent Relative Standard Deviation (%RSD) for the initial calibration greater than 30%.

Date	Compound	Fraction	%RSD
10-29	Vinyl acetate	VOA	109.5
11-11	Vinyl acetate	VOA	78.3

%RSD = Percent Relative Standard Deviation

4) Continuing Calibrations - Acceptable

All SPCC and CCC compounds were within contract required limits.

The Relative Response Factor (RRF)s for the volatile compounds 1,1-Dichloroethene, 1,1-Dichloroethane, cis-1,3-Dichloropropene and trans-1,3-Dichloropropene for the continuing calibration on 11-8-87 were calculated properly on the raw data sheet but were transferred incorrectly to the calibration form. The incorrect entries did not affect the Relative Response Factor (RRF) or the Percent Difference (%D) significantly.

The following non-SPCC compounds had Relative Response Factors (RRF) less than 0.05 for semi-volatiles and 0.300 for volatiles in the continuing calibration.

Date	Compound	Fraction	RRF
11-08-87	2-Butanone	VOA	0.023
11-08-87	1,2-Dichloropropane	VOA	0.255
11-08-87	4-Methyl-2-pentanone	VOA	0.290
11-09-87	2-Butanone	VOA	0.020
11-09-87	1,2-Dichloropropane	VOA	0.255
11-09-87	4-Methyl-2-pentanone	VOA	0.290
11-11-87	Acetone	VOA	0.054
11-11-87	2-Butanone	VOA	0.023
11-11-87	Carbon Disulfide	VOA	0.122
11-11-87	Vinyl acetate	VOA	0.198
11-10-87	4-Chloroaniline	BNA	0.009
11-24-87	4-Chloroaniline	BNA	0.017

RRF = Relative Response Factor

The following non-CCC compounds had a Percent Difference (%D) greater than 25% for the continuing calibration.

Date	Compound	Fraction	%D
11-08-87	Chloromethane	VOA	-28.5
11-08-87	Methylene chloride	VOA	-59.5
11-08-87	Acetone	VOA	82.5
11-08-87	Carbon disulfide	VOA	-79.6
11-08-87	1,1-Dichloroethane	VOA	-35.0
11-08-87	Carbon tetrachloride	VOA	27.9
11-08-87	Vinyl acetate	VOA	43.3
11-09-87	Methylene chloride	VOA	-51.1
11-09-87	Acetone	VOA	78.6
11-09-87	Carbon disulfide	VOA	-81.4
11-09-87	2-Butanone	VOA	28.6
11-09-87	Carbon tetrachloride	VOA	28.3
11-09-87	Vinyl acetate	VOA	49.6

Date	Compound	Fraction	%D
11-11-87	Chloromethane	VOA	-40.3
11-11-87	Carbon disulfide	VOA	-25.4
11-11-87	Vinyl acetate	VOA	-43.4
11-10-87	4-Chloroaniline	BNA	30.8
11-10-87	Hexachlorocyclopentadiene	BNA	42.6
11-10-87	2,4-Dinitrophenol	BNA	34.8
11-10-87	4-Nitrophenol	BNA	48.6
11-10-87	4-Nitroaniline	BNA	44.3

%D = Percent Difference

5) Instrument Detection Limits

The Instrument Detection Limits (IDL) were not supplied for any of the analytical equipment.

6) Blanks - Acceptable

All of the blanks for the volatile, semivolatile and pesticide/PCB analyses met the contract required limits for background contamination.

Fraction	Compound	Concentration ug/kg	CRQL ug/kg
VOA	Acetone	10	10

CRQL = Contract Required Detection Limit

The level of acetone contamination was below the CRDL and did not require any action.

7) Pesticide Standards

a) Linearity - Acceptable

The evaluation standards met the contract required limits of less that 10% relative standard deviation for linearity.

b) DDT Retention Time - Acceptable

The retention time for DDT met or exceeded 12 minutes for the standard runs.

c) Retention Time Windows - Acceptable

The retention time windows met the contract specifications.

d) Analytical Sequence - Acceptable

The analytical sequence met the contract required frequency and order.

e) 4,4'-DDT/Endrin Degradation - Acceptable

The percent breakdown for Endrin and DDT did not exceed the contract limit of 20% for the individual or combined breakdown totals.

f) Dibutylchlorendate Retention Time Shift - Acceptable

The Percent Difference (%D) calculated for the retention time of Dibutylchlorendate did not exceed 2% for the packed column.

g) Standards Summary - Acceptable

No pesticides or PCBs were identified. No action is required.

8) Surrogate Recovery - Acceptable

The surrogate recoveries for the volatile, semivolatile and pesticide/PCB analyses were within contract advisory limits.

9) Matrix Spike and Matrix Spike Duplicate - Acceptable

The Matrix Spike (MS) and Matrix Spike Duplicate (MSD) analyses for the volatile, semivolatile and pesticide/PCBs were within contract advisory limits.

10) Sample Analysis

The Average Relative Response Factor for 4-Chloroaniline was less than 0.050 for the semi-volatile initial calibration of October 29, 1987. Reports were flagged "J" (estimated) and detection limits flagged "UJ" (undetected, estimated quantitation limit) for all samples.

The Average Relative Response Factors for 1,2-Dichloropropane, 2-Butanone, and 4-Methyl-2-pentanone were less than 0.300 for the volatile ini-

tial calibration of October 29, 1987. Reports were flagged "J" (estimated) and detection limits flagged "UJ" (undetected, estimated quantitation limit) for JC-754, JC-755, and JC-757.

The Average Relative Response Factors for 2-Butanone, Acetone, Carbon disulfide, and Vinyl acetate were less than 0.300 for the volatile initial calibration of November 10, 1987. Reports were flagged "J" (estimated) and detection limits flagged "UJ" (undetected, estimated quantitation limit) for sample JC-756.

The Relative Standard deviation for Vinyl acetate was greater than 30% for the volatile initial calibrations of October 29, 1987 and November 11, 1987. Reports were flagged "J" (estimated) and detection limits flagged "UJ" (undetected, estimated quantitation limit) for all samples.

The Average Relative Response Factors for 2-Butanone, 1,2-Dichloropropane, and 4-Methyl-2-pentanone were less than 0.300 for the volatile continuing calibration of November 8, 1987. Reports were flagged "J" (estimated) and detection limits flagged "UJ" (undetected, estimated quantitation limit) for samples JC-754 and JC-755.

The Average Relative Response Factors for 2-Butanone, 1,2-Dichloropropane, and 4-Methyl-2-pentanone were less than 0.300 for the volatile continuing calibration of November 9, 1987. Reports were flagged "J" (estimated) and detection limits flagged "UJ" (undetected, estimated quantitation limit) for sample JC-757.

The Average Relative Response Factors for Acetone, 2-Butanone, Carbon disulfide, and Vinyl acetate were less than 0.300 for the volatile continuing calibration of November 11, 1987. Reports were flagged "J" (estimated) and detection limits flagged "UJ" (undetected, estimated quantitation limit) for sample JC-756.

The Average Relative Response Factor for 4-Chloroaniline was less than 0.050 for the semi-volatile continuing calibration run of November 10, 1987. Reports were flagged "J" (estimated) and detection limits flagged "UJ" (undetected, estimated quantitation limit) for all samples.

The Percent Differences for Chloromethane, Methylene chloride, Acetone, Carbon disulfide, 1,1-Dichloroethane, Carbon tetrachloride, and Vinyl acetate were greater than 25% in the volatile continuing calibration run of November 8, 1987. Reports were flagged "J" (estimated) and detection limits flagged "UJ" (undetected, estimated quantitation limit) for samples JC-754 and JC-755.

The Percent Differences for Methylene chloride, Acetone, Carbon disulfide, 2-Butanone, Carbon tetrachloride, and Vinyl acetate were greater than 25% in the volatile continuing calibration run of November 9, 1987. Reports were flagged "J" (estimated) and detection limits flagged "UJ" (undetected, estimated quantitation limit) for sample JC-757.

The Percent Differences for Chloromethane, Carbon disulfide, and Vinyl acetate were greater than 25% in the volatile continuing calibration run of November 11, 1987. Reports were flagged "J" (estimated) and detection limits flagged "UJ" (undetected, estimated quantitation limit) for sample JC-756.

The Percent Differences for 4-Chloroaniline, Hexachlorocyclopentadiene, 2,4-Dinitrophenol, 4-Nitrophenol, and 4-Nitroaniline were greater than 25% in the semi-volatile continuing calibration run of November 10, 1987. Reports were flagged "J" (estimated) and detection limits flagged "UJ" (undetected, estimated quantitation limit) for all samples.

11) Laboratory Contact - No laboratory contact was required.

The laboratory resubmitted the data packet. The corrections made were not associated with the analytical aspect of the packet, as reviewed in our memorandum of December 22, 1987, but provide classification of data qualifiers.

Data Use

The usefulness of the data is based on the criteria outlined in the "Laboratory Data Validation Functional Guidelines for Evaluating Organics and Pesticides/PCB Analyses" (R-582-5-5-01).

Upon consideration of the data qualifications noted above, the BNA, Volatile and Pesticide/PCB data are ACCEPTABLE for use except where flagged with data qualifiers that modify the usefulness of the individual values.

This data package refers to samples not collected by FIT. Data completeness is unknown.

Data Qualifiers

U - The material was analyzed for, but was not detected. The associated numerical value is an estimated sample quantitation limit.

J - The associated numerical value is an estimated quantity because quality control criteria were not met or concentrations reported were less than the CRQL.

R - Quality Control indicates that data are unusable (compound may or may not be present). Resampling and reanalysis are necessary for verification.

Q - No analytical result.

Data Qualifiers (Cont.)

N - Presumptive evidence of presence of material (tentative identification).

B - The compound was found in the laboratory blank as well as the sample.

M - Mass spectral criteria for positive identification were not met. However, in the opinion of the laboratory, the identification is correct based on the analyst's professional judgement.

F - Concentration of this compound exceeds either the primary or secondary drinking water standard listed in the Safe Drinking Water Act of 1974.

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H H

MEMORANDUM

DATE: January 28, 1988

TO: John Osborn, FIT-RPO, USEPA, Region X

FOR: Joyce Crosson, RSCC, USEPA, Region X

THRU: David Buecker, FIT-OM, E&E, Seattle DAB

FROM: James Herndon, Chemist, E&E, Seattle JEH
Andrew Hafferty, Senior Chemist, E&E, Seattle AHH

SUBJ: QA of Case SAS 3453J (Sulfate, Phosphates/Phosphorus, Fluoride)
Monsanto Chemical Company

TDD: F10-8702-06

CC: Raleigh Farlow, ESD-DPO, USEPA, Region X
Gerald Muth, DPO, USEPA, Region X, Laboratory
Charles Sands, DPO, USEPA, Region III
John Osborn, ESD-PO, USEPA, Region X
Deborah Flood, HWD-SM, USEPA, Region X
Jeffrey Whidden FIT-PM, E&E, Seattle

The Quality Assurance review of 18 samples, Case SAS 3453J, collected from Monsanto Chemical, has been completed. The 16 water and two soil samples were analyzed at low level for sulfate, fluoride, orthophosphate, hydrolyzable phosphorus and total phosphorus by Centec Analytical Services of Salem, Virginia. The samples were numbered:

EPA #	Lab #	Matrix	*	EPA #	Lab #	Matrix
3453J-01	68379	Water	*	3453J-10	68388	Water
3453J-02	68380	Water	*	3453J-11	68389	Water
3453J-03	68381	Water	*	3453J-12	68390	Water
3453J-04	68382	Water	*	3453J-13	68391	Water
3453J-05	68383	Water	*	3453J-15	68392	Soil
3453J-06	68384	Water	*	3453J-17	68393	Soil
3453J-07	68385	Water	*	3453J-18	68394	Water
3453J-08	68386	Water	*	3453J-20	68395	Water
3453J-09	68387	Water	*	3453J-28	68396	Water

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JC757

Lab Name: DATACHEM INC. Contract: 68-01-7466

Lab Code: DATAC Case No.: 8383 SAS No.: _____ SDG No.: JC754

Matrix: (soil/water) WATER Lab Sample ID: CLP:008

Sample wt/vol: 1000 (g/mL) ML Lab File ID: UQ11JC757

Level: (low/med) LOW Date Received: 11/05/87

% Moisture: not dec. ____ dec. ____ Date Extracted: 11/06/87

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 11/10/87

GPC Cleanup: (Y/N) N pH: 5.0 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl Alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
39638-32-9	bis(2-Chloroisopropyl)Ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	50	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	UJ
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	UJ
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethyl Phthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JC757

Lab Name: DATACHEM INC. Contract: 68-01-7466

Lab Code: DATAC Case No.: 9383 SAS No.: _____ SDG No.: JC754

Matrix: (soil/water) WATER Lab Sample ID: CLP:008

Sample wt/vol: 1000 (g/mL) ML Lab File ID: UQ11JC757

Level: (low/med) LOW Date Received: 11/05/87

% Moisture: not dec. ____ dec. ____ Date Extracted: 11/06/87

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 11/10/87

GPC Cleanup: (Y/N) N pH: 5.0 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	UJ
100-02-7	4-Nitrophenol	50	UJ
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-10-6	4-Nitroaniline	50	UJ
534-52-1	4,6-Dinitro-2-Methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

(1) - Cannot be separated from Diphenylamine

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

JC757

Lab Name: DATACHEM INC. Contract: 68-01-7466

Lab Code: DATAC Case No.: 8383 SAS No.: _____ SDG No.: JC754

Matrix: (soil/water) WATER Lab Sample ID: CLP1008

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: BH07CLP8

Level: (low/med) LOW Date Received: 11/05/87

% Moisture: not dec. ____ Date Analyzed: 11/09/87

Column (pack/cap) PACK Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

00270

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

JC757

Lab Name: DATACHEM INC. Contract: 68-01-7468

Lab Code: DATAC Case No.: 8383 SAS No.: _____ SDG No.: JC754

Matrix: (soil/water) WATER Lab Sample ID: CLP1008

Sample wt/vol: 1000 (g/mL) ML Lab File ID: UQ11JC757

Level: (low/med) LOW Date Received: 11/05/87

% Moisture: not dec. ____ dec. ____ Date Extracted: 11/06/87

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 11/10/87

GPC Cleanup: (Y/N) N pH: 5.0 Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

00980

Data Qualifications

The following comments refer to the laboratory performance in meeting the analysis as outlined in the Method for Chemical Analysis of Water and Wastes (3/83), method 340.1, 365.1 and 375.1. Quality Control specifications were outlined in the memorandum from Andrew Hafferty (Ecology and Environment, Seattle) on October 28, 1987.

1) Timeliness - Acceptable

Sample Number	Sample Date	Recd. Date	Ophos. Anal.	Hphos. Anal.	Tphos. Anal.	Sulf. Anal.	Fluro. Anal.
3453J-01	11/3-4	11/07	11/09	12/03	12/03	12/04	12/14
3453J-02	11/3-4	11/07	11/09	12/03	12/03	12/04	12/14
3453J-03	11/3-4	11/07	11/09	12/03	12/03	12/04	12/14
3453J-04	11/3-4	11/07	11/09	12/03	12/03	12/04	12/14
3453J-05	11/3-4	11/07	11/09	12/03	12/03	12/04	12/14
3453J-06	11/3-4	11/07	11/09	12/03	12/03	12/04	12/14
3453J-07	11/3-4	11/07	11/09	12/03	12/03	12/04	12/14
3453J-08	11/3-4	11/07	11/09	12/03	12/03	12/04	12/14
3453J-09	11/3-4	11/07	11/09	12/03	12/03	12/04	12/14
3453J-10	11/3-4	11/07	11/09	12/03	12/03	12/04	12/14
3453J-11	11/3-4	11/07	11/09	12/03	12/03	12/04	12/14
3453J-12	11/3-4	11/07	11/09	12/03	12/03	12/04	12/14
3453J-13	11/3-4	11/07	11/09	12/03	12/03	12/04	12/14
3453J-15	11/3-4	11/07	11/09	12/03	12/03	12/04	12/14
3453J-17	11/3-4	11/07	11/09	12/03	12/03	12/04	12/14
3453J-18	11/3-4	11/07	11/09	12/03	12/03	12/04	12/14
3453J-20	11/3-4	11/07	11/09	12/03	12/03	12/04	12/14
3453J-28	11/3-4	11/07	11/09	12/03	12/03	12/04	12/14

Ophos. = Orthophosphate
Hphos. = Hydrolyzable phosphorus
Tphos. = Total phosphorus
Sulf. = Sulfate
Fluro. = Fluoride

The holding times for these parameters were taken from the Method for Chemical Analysis of Water and Wastes (3/83). Holding times are as follows:

Parameter	Holding Time
Orthophosphate	48 hr.
Hydrolyzable phosphorus	28 days
Total phosphorus	28 days
Sulfate	28 days
Fluoride	28 days

All parameters except Fluoride and Orthophosphate met the holding time requirements. Fluoride analysis was done 37 days after receipt. Orthophosphate analyses were completed by the laboratory by within five to six days after collection. Samples were held three to four days in the field prior to shipment to the laboratory. No significant effect is expected from the delay in that analysis.

2) Initial Calibration - Acceptable

The laboratory performed a six point initial calibration on each parameter. Results of analyses by linear regression follow:

Parameter	Slope	Intercept	r
Orthophosphate.	100.3	-0.1299	0.9999
Hydrolyzable phosphorus #1	105.8	0.5734	0.9931
Hydrolyzable phosphorus #2	100.8	0.5172	0.9997
Hydro. & Total phosphorus	99.31	0.2135	0.9999
Sulfate	0.3558	-8.998	0.9947
Fluoride	-0.1441	0.2781	0.9958

r = correlation coefficient

The 1.0 ppm standard in the initial calibration for Orthophosphate was out of range on the chart recorder. That standard was used in the calculation of regression. The effect on data quality is not significant in light of the good recoveries of the continuing calibration standards.

The sulfate curve as drawn by the lab is non-linear between the concentrations 10 and 100 ppm. The correlation coefficient for the initial calibration is high enough to assure no significant effect on data quality.

3) Continuing Calibration - Acceptable

The laboratory analyzed continuing calibration standards and blanks at approximately every 10 samples. The recoveries for these standards were between 98% and 105% for all parameters.

4) Continuing Calibration Blanks - Acceptable

No positive results above instrument detection limits for the Continuing Calibration Blanks were found.

5) Instrument Detection Limits - Acceptable

The detection limits for the instrument were not calculated. The lowest detectable standard was considered to be the detection limit.

Parameter	IDL	MDL
Orthophosphate	0.01ppm	0.01ppm
Hydrolyzable phosphorus	0.01ppm	0.01ppm
Total phosphorus	0.01ppm	0.01ppm
Sulfate	10.0ppm	10.0ppm
Fluoride	0.10ppm	0.10ppm

IDL = Instrument Detection Limit
MDL = Method Detection Limit

6) Laboratory Control Sample - Acceptable

EPA Water Pollution Control Samples were analyzed with each parameter.

Parameter & Run Number	Control Sample #	Recovery
Orthophosphate.	WP-284-7	90%
Hydrolyzable phosphorus #1	WP-284-7	85%
Hydrolyzable phosphorus #2	WP-284-7	95%
Sulfate	WP-1185	87%
Fluoride	WP-384	94%

7) Duplicate Sample Analysis

The RPD for the duplicate analysis of sample 3453J-20 for total phosphorus was miscalculated. Recalculation using data from the raw data tracings gives a sample value of 5 ppm (vs. 6.5 ppm) and a duplicate value of 7 ppm. The RPD is then 33% (vs. 7%)

Duplicate analysis for the soil samples did not include Orthophosphate or Hydrolyzable phosphorus.

The procedure for analysis of duplicates did not follow the outline of the QC requested in the memorandum. All requested parameters were found in the non-spiked samples analyzed in duplicate. The analysis data generated fills the need for duplicate Quality Control.

RPD values for duplicate soil and water samples were within acceptable limits for the analyses.

8) Spiked Sample Analysis - Acceptable

Values for the recovery of spikes and samples were listed at half the true value for all parameters. This was caused by the 1:1 dilution that occurred in the spiking procedure. The formula given on the Spike Sample Recovery form was incorrect for the calculation of recoveries given the values on the form. Values reported on the summary forms were correct.

The spike recovery values for the soil and water samples were within acceptable limits for the analysis.

9) Sample Analysis

No flagging of the data was necessary.

10) Laboratory Contact

No contact was required.

Data Use

The usefulness of the data is based generally on the criteria outlined in the "Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses" (R-582-5-5-01).

Upon consideration of the above comments, the data is ACCEPTABLE for use except where flagged with data qualifiers which modify the usefulness of individual values.

Additional data packages associated with this project are expected from CLP or EPA laboratories.

Data Qualifiers

C - Concentration Qualifier

J - Reported value is less than the Contract Required Detection Limit (CRDL) but greater than the Instrument Detection Limit (IDL).

U - Analyte was tested for but not detected.

Q - Quality Qualifier

E - Reported value is estimated because of the presence of interference. Explanatory note is included in the Cover Page (if the problem applies to all samples) or on the form I-IN (if it is an isolated problem).

M - Duplicate injection precision not met.

N - Spiked sample recovery not within control limits.

S - The reported value was determined by the Method of Standard Additions (MSA).

W - Post digestion spike for Furnace AA analysis is out of control limits (85 to 115%), while sample absorbance is less than 50% of spike absorbance.

F - Concentration of this element exceeds either the primary or secondary drinking water standard listed in the Safe Drinking Water Act of 1974.

* - Duplicate analysis not within control limits.

+ - Correlation coefficient for the MSA is less than 0.995.

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International Specialists in the Environment

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MEMORANDUM

DATE: February 10, 1988

TO: John Osborn, FIT-RPO, USEPA, Region X

FOR: Joyce Crosson, RSCC, USEPA, Region X

THRU: for David Buecker, FIT-OM, E&E, Seattle DRT

FROM: James Herndon, Chemist, E&E, Seattle
Andrew Hafferty, Senior Chemist, E&E, Seattle JH

SUBJ: QA of Case 8383 (Inorganics)
Monsanto Chemical

TDD: F10-8702-06

CC: Raleigh Farlow, ESD-DPO, USEPA, Region X
Gerald Muth, DPO, USEPA, Region X Laboratory, Manchester
John Tilstra, DPO, USEPA, Region IX
John Osborn, ESD-PO, USEPA, Region X
Deborah Flood, HWD-SM, USEPA, Region X
Jeffrey Whidden, E&E, Seattle

The Quality Assurance review of 31 samples, Case 8383, collected from Monsanto Chemical, has been completed. The 31 water samples were analyzed at Low level for TCL INORGANICS by Rocky Mountain Analytical of Arvada, Colorado.

The samples were received in two packets and were numbered by packet as follows:

Data Packet #1		Data Packet #2	
MJB-539	MJB-550	MJB-543	MJB-564
MJB-540	MJB-551	MJB-559	MJB-567
MJB-541	MJB-552	MJB-560	MJB-568
MJB-542	MJB-553	MJB-561	MJB-580
MJB-544	MJB-554	MJB-562	MJB-581
MJB-545	MJB-555	MJB-563	MJB-582
MJB-546	MJB-556		
MJB-547	MJB-557		
MJB-548	MJB-558		
MJB-549			

Data Qualifications

The following comments refer to the laboratory performance in meeting the Quality Control specifications outlined in IFB WA87-K025, IFB WA87-K026 and IFB WA87-K027.

1) Timeliness - Acceptable

Sample Number	Sample Date	Recd. Date	ICP Prep.	ICP Anal.	AA Prep.	AA Anal.	HG. Anal.
MJB-539	11/03	11/06	11/23	12/07	11/23	12/06	12/01
MJB-540	11/03	11/06	11/23	12/07	11/23	12/06	12/01
MJB-541	11/03	11/06	11/23	12/07	11/23	12/06	12/01
MJB-542	11/03	11/06	11/23	12/07	11/23	12/06	12/01
MJB-543	11/03	11/06	11/23	12/08	11/23	12/08	12/01
MJB-544	11/03	11/06	11/23	12/07	11/23	12/06	12/01
MJB-545	11/03	11/06	11/23	12/07	11/23	12/06	12/01
MJB-546	11/03	11/06	11/23	12/08	11/23	12/06	12/01
MJB-547	11/03	11/06	11/23	12/08	11/23	12/06	12/01
MJB-548	11/03	11/06	11/23	12/08	11/23	12/06	12/01
MJB-549	11/03	11/06	11/23	12/08	11/23	12/06	12/01
MJB-550	11/03	11/06	11/23	12/08	11/23	12/06	12/01
MJB-551	11/03	11/06	11/23	12/08	11/23	12/06	12/01
MJB-552	11/03	11/06	11/23	12/08	11/23	12/06	12/01
MJB-553	11/03	11/06	11/23	12/08	11/23	12/06	12/01
MJB-554	11/03	11/06	11/23	12/08	11/23	12/06	12/01
MJB-555	11/03	11/06	11/23	12/08	11/23	12/06	12/01
MJB-556	11/03	11/06	11/23	12/08	11/23	12/06	12/01
MJB-557	11/03	11/06	11/23	12/08	11/23	12/06	12/01
MJB-558	11/03	11/06	11/23	12/08	11/23	12/06	12/01
MJB-559	11/03	11/06	11/23	12/08	11/23	12/08	12/01
MJB-560	11/03	11/06	11/23	12/08	11/23	12/08	12/01
MJB-561	11/04	11/06	11/23	12/08	11/23	12/08	12/01
MJB-562	11/04	11/06	11/23	12/08	11/23	12/08	12/01
MJB-563	11/03	11/06	11/23	12/08	11/23	12/08	12/01
MJB-564	11/03	11/06	11/23	12/08	11/23	12/08	12/01
MJB-567	11/04	11/06	11/23	12/08	11/23	12/08	12/01
MJB-568	11/04	11/06	11/23	12/08	11/23	12/08	12/01
MJB-580	11/03	11/06	11/23	12/08	11/23	12/08	12/01
MJB-581	11/03	11/06	11/23	12/08	11/23	12/08	12/01
MJB-582	11/04	11/06	11/23	12/08	11/23	12/08	12/01

2) Initial Calibration - Acceptable

All ICP and Graphite Furnace standards met the requirements for frequency and percent recovery for all metals.

Forms for the Calibrations were separated by ICP and Furnace/ Cold Vapor results instead of compiling the data into a complete summary form series.

3) Continuing Calibration - Acceptable

All ICP and Graphite Furnace continuing standards met the requirements for frequency and percent recovery for all metals.

The first continuing calibration data as listed on the form are not the actual first continuing calibration results. The results listed come from the initial multi-point calibration standard number 3 from earlier in the day. The second continuing calibration column on the form is the data that should have been the first continuing calibration .

Forms for the Calibrations were separated by ICP and Furnace/ Cold Vapor results instead of compiling the data into a complete summary form series.

4) Instrument Detection Limits - Acceptable

Instrument Detection Limits (IDL) were equal to or below the Contract Required Detection Limits (CRDL) for all metals.

5) Blanks - Acceptable

All ICP and Graphite Furnace Initial Calibration, Continuing Calibration and Preparation Blanks met the requirements for frequency. Background levels of elements were below the Instrument Detection Limits.

Forms for the blanks were separated by ICP and Furnace/ Cold Vapor results instead of compiling the data into a complete summary form series.

Negative values were entered for the Lead analysis on the Continuing Calibration Blank. The negative values were incorrectly flagged "B" (value between Contract Required Detection Limit and Instrument Detection Limit) by the laboratory.

6) ICP Interference Check - Acceptable

The Interference Check Sample (ICS) elements met the contract required limits for recovery on the analysis of A and A+B ICS on 12/8/87 run at 1:44 & 2:02 (packet 1).

The ICS elements listed in the form for the analysis of the initial A and A+B ICS on 12/8/87 run at 15:30 and 15:36 (packet 2) are not correctly transferred to the form. The raw data does not match the values on the form. Recoveries calculated from raw data for the A and A+B ICS are within the contract required limits.

The final A and A+B ICS for the date above were incorrectly entered on the form. Values entered for ICS A results were from a previous sample analysis, not the final ICS. The raw data could not be found in the packet (packet 2).

7) Laboratory Control Sample - Acceptable

All elements in the Laboratory Control sample had recoveries within the contract limits calculated for waters.

Forms for the Laboratory Control Sample were separated by ICP and Furnace/ Cold Vapor results instead of compiling the data into a single complete summary form.

8) Duplicate Sample Analysis - Acceptable

The duplicate values for Selenium in sample MJB-543 (packet 2) and Lead in sample MJB-544 (packet 1) did not meet the calculated contract required limits for duplicates.

Sample	Matrix	Element	Duplicate Value	QC Limit
MJB-543	Water	Selenium	20U	4.7 - 14.7
MJB-544	Water	Lead	5.3	0 - 5

QC Limit = +/- CRDL if sample is less than 5 times CRDL

All Lead results in packet 1 were flagged "J" (estimated). All Selenium results in packet 2 were flagged "J" (estimated).

9) Spiked Sample Analysis - Acceptable

The ratio of sample to spike result must be less than or equal to 4 to be considered for QC limits. The recovery values for Selenium in sample MJB-540 (packet 1) and Thallium in sample MJB-560 (packet 2) were outside of the contract required quality control limits. The spiked sample results were less than the sample results giving a negative recovery value.

Sample	Matrix	Element	%R	QC Limits	Ratio
MJB-540	Water	Selenium	-140	75 - 125 %	1.4
MJB-560	Water	Thallium	-61.8	75 - 125 %	0.86

%R = Percent Recovery
Ratio = Sample Value/Spike Value

All selenium results in packet 1 were flagged "J" (estimated) and detection limits flagged "R" (unusable). All Thallium results in packet 2 were flagged "J" (estimated) and detection limits flagged "R" (unusable).

10) ICP Serial Dilution - Acceptable

The ICP serial dilution analyses had Percent Differences (%D) less than 10% for the elements having concentrations greater than 10 times the Instrument Detection Limit.

11) Furnace AA - Acceptable

The sequence for sample and Analytical Spike analysis was within contract requirements for Relative Percent Difference of duplicate analytical runs. The Analytical Spikes were made at twice the Contract Required Detection Limit.

Spike recovery

Samples with Analytical Spike recoveries of less than 40% were diluted and rerun. Samples with recoveries outside of the contract required Analytical Spike recovery limits that had a sample value greater than 50% of the spike value were run by the Method of Standard Addition (MSA).

Method of Standard Addition (MSA) Analysis

Analyses with Correlation Coefficients (r) less than 0.995 were reanalyzed and recalculated.

The calculated Correlation Factor (r) for Arsenic in sample MJB-540S (spike) (packet 1) was given as 0.0000 and the final concentration value was given as 0.0 on the MSA form. The factor calculated from the data on the form was 0.997 and the final concentration calculated from these values was 52.1 ug/L. The final concentration value on the Spiked Sample summary form (41.3 ug/L) does not agree with this value. A second Arsenic MSA analysis not listed on the form was found in the raw data. The value calculated from that MSA was the one used in the Spiked Sample form. No explanation for the rejection of the data on the MSA form was provided.

The report forms for MSA list Correlation Factor (r) results to the fourth decimal place. The results are actually rounded to the third decimal place.

The following MSA analyses did not generate a Correlation Coefficient of 0.995 or more on the initial or repeat analysis.

Sample	Element	r
MJB-552	Arsenic	0.991
MJB-552R	Arsenic	0.994

r = Correlation Coefficient

The Arsenic results for sample MJB-552 were flagged "J" (estimated quantity).

12) Mercury Analysis - Acceptable

Mercury analyses met all contract requirements for frequency of quality control and analytical sequence.

13) Cyanide Analysis - Acceptable

Cyanide analysis was not requested for this sample set.

14) Sample Analysis -

The results for the following samples and elements were flagged "F" (exceeds drinking water limits):

Sample Number	All results in ug/L (Water Quality Limits)							
	As (50)	Cd (10)	Cr (50)	Fe (300)	Pb (50)	Se (10)	Mn (50)	Zn (5000)
MJB-539	--	88	--	--	--	19	--	--
MJB-540	--	90	--	--	--	14	--	--
MJB-547	--	--	--	--	--	--	1320	--
MJB-548	--	--	--	--	--	--	1330	--
MJB-549	--	57	--	--	--	550	--	--
MJB-550	--	57	--	--	--	686	--	--
MJB-551	--	41	--	--	--	189	1330	--
MJB-552	--	36	--	--	--	161	1300	--
MJB-553	--	781	--	1130	--	291	2180	6160
MJB-554	--	782	--	797	--	181	2170	6130
MJB-555	--	--	--	23700	--	--	324	--
MJB-557	--	10	--	--	--	775	--	--
MJB-558	--	--	--	--	--	890	--	--
MJB-559	--	5520	--	--	--*	359	1260	10200
MJB-560	--	5220	--	--	--	375	1220	9430

Sample Number	All results in ug/L (Water Quality Limits) As (50)	Cd (10)	Cr (50)	Fe (300)	Pb (50)	Se (10)	Mn (50)	Zn (5000)
MJB-562	--	11	--	--	--	--	--	--
MJB-563	--	--	--	--	--	91	--	--
MJB-564	--	15	--	--	--	77	--	--
MJB-567	--	49	--	1060	--	--	--	--
MJB-568	147	168000	192	3520	77	5270	9240	354000
MJB-580	--	10	--	--	--	--	--	--
MJB-582	--	32	--	--	--	17	--	--

As - Arsenic
Cd - Cadmium
Cr - Chromium
Fe - Iron
Pb - Lead
Se - Selenium
Mn - Manganese
Zn - Zinc

-- = Results below water quality limits
* = see explaination of result below

* - The result for Lead was not on the sample report form for sample MJB-559. The analysis was done and the value should be 1.0U ug/L.

Laboratory Contact

The laboratory was contacted on January 7, 1988 concerning irregularities in the forms. The Laboratory Contact form is attached. The laboratory contact said the problems stemed from bugs in a new computer form generating program. The resubmitted forms corrected some of the problems but also created new ones. A second submittal was not requested.

Data Use

The usefulness of the data is based on the criteria outlined in the "Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses" (R-582-5-5-01).

Upon consideration of the above comments, the data is ACCEPTABLE for use except where flagged with data qualifiers which modify the usefulness of individual values.

This QA memorandum completes the series of QA reviews of CLP lab data for samples collected during the Site Inspection identified on the cover page under the heading SUBJ:.

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JC755

Lab Name: DATACHEM INC. Contract: 68-01-7466

Lab Code: DATAC Case No.: 8383 SAS No.: _____ SDG No.: JC754

Matrix: (soil/water) WATER Lab Sample ID: CLP1006

Sample wt/vol: 1000 (g/mL) ML Lab File ID: UQ10JC755

Level: (low/med) LOW Date Received: 11/05/87

% Moisture: not dec. _____ dec. _____ Date Extracted: 11/06/87

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 11/10/87

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	UJ
100-02-7	4-Nitrophenol	50	UJ
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-10-6	4-Nitroaniline	50	UJ
534-52-1	4,6-Dinitro-2-Methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

(1) - Cannot be separated from Diphenylamine

1F

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

JC755

Lab Name: DATACHEM INC. Contract: 68-01-7466

Lab Code: DATAC Case No.: 8383 SAS No.: _____ SDG No.: JC754

Matrix: (soil/water) WATER Lab Sample ID: CLP1006

Sample wt/vol: 1000 (g/mL) ML Lab File ID: UQ10JC755

Level: (low/med) LOW Date Received: 11/05/87

% Moisture: not dec. _____ dec. _____ Date Extracted: 11/06/87

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 11/10/87

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

00950

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JC756

Lab Name: DATACHEM INC. Contract: 68-01-7466

Lab Code: DATAC Case No.: 8383 SAS No.: _____ SDG No.: JC754

Matrix: (soil/water) WATER Lab Sample ID: CLP1007

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: BI28JC756

Level: (low/med) LOW Date Received: 11/05/87

% Moisture: not dec. _____ Date Analyzed: 11/11/87

Column: (pack/cap) PACK Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	UJ
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	UJ
75-15-0	Carbon Disulfide	5	UJ
75-35-4	1,1-Dichloroethene	5	U
75-35-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	UJ
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	UJ
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	UJ
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	UJ
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
----------	Total Xylenes	5	U

JCH 1/26/88

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JC756

Lab Name: DATACHEM INC. Contract: 68-01-7466

Lab Code: DATAC Case No.: 8383 SAS No.: _____ SDG No.: JC754

Matrix: (soil/water WATER Lab Sample ID: CLP1007

Sample wt/vol: 1000 (g/mL) ML Lab File ID: UQ6JC756

Level: (low/med) LOW Date Received: 11/05/87

% Moisture: not dec. ____ dec. ____ Date Extracted: 11/06/87

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 11/10/87

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl Alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
39638-32-9	bis(2-Chloroisopropyl)Ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	50	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U J
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U J
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethyl Phthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JC756

Lab Name: DATACHEM INC. Contract: 68-01-7466

Lab Code: DATAC Case No.: 8383 SAS No.: _____ SDG No.: JC754

Matrix: (soil/water) WATER Lab Sample ID: CLP100?

Sample wt/vol: 1000 (g/mL) ML Lab File ID: UQ6JC?56

Level: (low/med) LOW Date Received: 11/05/87

% Moisture: not dec. ____ dec. ____ Date Extracted: 11/06/87

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 11/10/87

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	UJ
100-02-7	4-Nitrophenol	50	UJ
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-10-6	4-Nitroaniline	50	UJ
534-52-1	4,6-Dinitro-2-Methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

(1) - Cannot be separated from Diphenylamine

00964

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

JC756

Lab Name: DATACHEM INC. Contract: 68-01-7466

Lab Code: DATAC Case No.: 8383 SAS No.: _____ SDG No.: JC75-

Matrix: (soil water) WATER Lab Sample ID: CLP100?

Sample wt/vol: 1000 (g/mL) ML Lab File ID: UQ6JC756

Level: (low/med) LOW Date Received: 11/05/87

% Moisture: not dec. ____ dec. ____ Date Extracted: 11/06/87

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 11/10/87

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

00965

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JC757

Lab Name: DATACHEM INC. Contract: 68-01-7466

Lab Code: DATAC Case No.: 8383 SAS No.: _____ SDG No.: JC754

Matrix: (soil/water) WATER Lab Sample ID: CLP1008

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: BH07CLP8

Level: (low/med) LOW Date Received: 11/05/87

% Moisture: not dec. ____ Date Analyzed: 11/09/87

Column: (pack/cap) PACK Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	UJ
67-64-1	Acetone	10	UJ
75-15-0	Carbon Disulfide	5	UJ
75-35-4	1,1-Dichloroethene	5	U
75-35-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	UJ
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	UJ
108-05-4	Vinyl Acetate	10	UJ
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	UJ
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	UJ
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
----------	Total Xylenes	5	U

JCH 4/26/88

1F

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

JC754

Lab Name: CATACHEM INC. Contract: 68-03-[illegible]

Lab Code: CATAC Case No.: 4881 SAS No.: _____ SDG No.: JC754

Matrix: (soil/water) WATER Lab Sample ID: JC754NS

Sample wt/vol: 1000 (g/mL) ML Lab File ID: [illegible]

Level: (low/med) LOW Date Received: 11/05/87

% Moisture: not dec. _____ dec. _____ Date Extracted: 11/08/87

Extraction: SepF Cont/Sonc SEPF Date Analyzed: 11/10/87

GPC Cleanup: Y/N N pH: 7.0 Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JC754

Lab Name: CATACHEM INC. Contract: 68-01-7388

Lab Code: CATAC Case No.: 5380 SAS No.: _____ SDG No.: JC754

Matrix: (soil/water) WATER Lab Sample ID: 7L0205

Sample wt/vol: 1030 (g/mL) ML Lab File ID: V0317F4

Level: (low/med) LOW Date Received: 11/05/87

% Moisture: not dec. _____ dec. _____ Date Extracted: 11/06/87

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 11/12/87

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	UJ
100-02-7	4-Nitrophenol	50	UJ
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-10-6	4-Nitroaniline	50	UJ
534-52-1	4,6-Dinitro-2-Methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

(1) - Cannot be separated from Diphenylamine

11/13/87

FORM I SV-1

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

JC754

Lab Name: DATACHEM INC. Contract: 68-01-7466

Lab Code: DATAC Case No.: 8383 SAS No.: _____ SDG No.: JC754

Matrix: (soil/water) WATER Lab Sample ID: CLP1005

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: BG97CLP5

Level: (low/med) LOW Date Received: 11/05/87

% Moisture: not dec. _____ Date Analyzed: 11/09/87

Column (pack/cap) PACK Dilution Factor: 1.00

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
				-

00737

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JC755

Lab Name: DATACHEM INC. Contract: 68-01-7466

Lab Code: DATAC Case No.: 8383 SAS No.: _____ SDG No.: JC754

Matrix: (soil/water) WATER Lab Sample ID: CLP1006

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: BG98CLP6

Level: (low/med) LOW Date Received: 11/05/87

% Moisture: not dec. _____ Date Analyzed: 11/09/87

Column: (pack/cap) PACK Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	UJ
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	UJ
67-64-1	Acetone	8	BJ
75-15-0	Carbon Disulfide	5	UJ
75-35-4	1,1-Dichloroethene	5	U
75-35-3	1,1-Dichloroethane	5	UJ
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	UJ
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	UJ
108-05-4	Vinyl Acetate	10	UJ
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	UJ
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	UJ
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
----------	Total Xylenes	5	U

JEM 1/26/88

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JC755

Lab Name: DATACHEM INC. Contract: 68-01-7466

Lab Code: DATAC Case No.: 8383 SAS No.: _____ SDG No.: JC754

Matrix: (soil/water) WATER Lab Sample ID: CLP1008

Sample wt/vol: 1000 (g/mL) ML Lab File ID: UQ10JC755

Level: (low/med) LOW Date Received: 11/05/87

% Moisture: not dec. _____ dec. _____ Date Extracted: 11/06/87

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 11/10/87

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis 2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl Alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
39638-32-9	bis(2-Chloroisopropyl)Ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	50	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	UJ
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	UJ
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethyl Phthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

JC755

Lab Name: DATACHEM INC. Contract: 68-01-7466

Lab Code: DATAC Case No.: 8383 SAS No.: _____ SDG No.: JC754

Matrix: (soil/water) WATER Lab Sample ID: CLP1006

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: BG98CLP6

Level: (low/med) LOW Date Received: 11/05/87

% Moisture: not dec. ____ Date Analyzed: 11/09/87

Column (pack/cap) PACK Dilution Factor: 1.00

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

Data Qualifiers

U - The material was analyzed for, but was not detected. The associated numerical value is an estimated sample quantitation limit.

J - The associated numerical value is an estimated quantity because quality control criteria were not met or concentrations reported were less than the CRQL.

R - Quality Control indicates that data are unusable (compound may or may not be present). Resampling and reanalysis are necessary for verification.

Q - No analytical result.

N - Presumptive evidence of presence of material (tentative identification).

B - The compound was found in the laboratory blank as well as the sample.

M - Mass spectral criteria for positive identification were not met. However, in the opinion of the laboratory, the identification is correct based on the analyst's professional judgement.

F - Concentration of this compound exceeds either the primary or secondary drinking water standard listed in the Safe Drinking Water Act of 1974.

870206.INO (for WP use only)

ecology and environment, inc.
101 YESLER WAY, SEATTLE, WASHINGTON, 98104, TEL. 206/624-9537
International Specialists in the Environment

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MEMORANDUM

DATE: December 22, 1987

TO: John Osborn, FIT-RPO, USEPA, Region X

FOR: Joyce Crosson, RSCC, USEPA, Region X

THRU: David Buecker, FIT-OM, E&E, Seattle DAB

FROM: James Herndon, Chemist, E&E, Seattle JH
Andrew Hafferty, Senior Chemist, E&E, Seattle

SUBJ: QA of Case 8383 (Organics)
Monsanto Chemical

REF: F10-8702-06

CC: Raleigh Farlow, ESD-DPO, USEPA, Region X
John Osborn, ESD-PO, USEPA, Region X
Deborah Flood, HWD-SM, USEPA, Region X
Jeff Whidden, FIT-PO, E&E, Seattle

The Quality Assurance review of four samples, Case 8383, collected from Monsanto Chemical, has been completed. Four water samples were analyzed at Low level for Volatiles, Semivolatiles and Pesticides/PCBs by Data Chem Inc., of Salt Lake City, Utah. The samples were numbered:

JC-754	JC-756
JC-755	JC-757

Data Qualifications

The following comments refer to the laboratory performance in meeting the Quality Control Specifications outlined in IFB WA - 87K236-238.

1) Timeliness - Acceptable

Sample Number	Sample Date	Recd. Date	VOA Anal.	BNA Extr.	BNA Anal.	PEST Extr.	PEST Anal.
JC-754	11-03	11-05	11-09	11-06	11-10	11-05	11-11
JC-755	11-03	11-05	11-09	11-06	11-10	11-05	11-11
JC-756	11-03	11-05	11-11	11-06	11-10	11-05	11-11
JC-757	11-03	11-05	11-09	11-06	11-10	11-05	11-11

2) Instrument Tuning - Acceptable

All tuning check compound mass abundances and ratios were within contract required limits.

The rounding method used when transferring the relative intensity (RI) data from the raw BFB and DFTPP spectra listings to the tuning form is inconsistent. The BFB spectra of 10/29/87 had mass 176 with an RI of 83.03 rounded to 83.1. The BFB spectra of 11/8/87 had mass 96 with an RI of 8.99 rounded to 8.9. Several more examples of the inconsistency were found.

3) Initial Calibration - Acceptable

All SPCC and CCC compounds were within contract required limits.

The raw data sheets for the semivolatile compounds Benzoic acid, 2,4,5-Trichlorophenol, 2-Nitroaniline, 3-Nitroaniline, 4-Nitroaniline, 2,4-Dinitrophenol, 4-Nitrophenol, 4,6-Dinitro-2-methylphenol and Pentachlorophenol showed detection and generation of a Relative Response Factor (RRF) for the 20 ng standard runs on 10/21/87 and 11/24/87. These RRF were consistent with those generated by the standards run at higher concentrations on the same day but were not included in the initial calibration form. The exclusion did not adversely affect the Average Relative Response Factor (ARRF) or the Percent Relative Standard Deviation (%RSD) significantly.

The raw data sheets for the volatile initial calibration show the Methylene chloride and Acetone referenced to an non-internal standard compound for the calculation of Relative Response Factor (RRF) for all of the standard runs in the initial calibration of 10/29/87. The numbers on the raw data sheets were incorrect, but the numbers on the initial calibration form were the corrected RRF.

The following non-SPCC compounds had an Average Relative Response Factor (ARRF) less than 0.05 for semivolatiles and 0.300 for volatiles in the initial calibration.

Date	Compound	Fraction	ARRF
10-29	4-Chloroaniline	BNA	0.013
10-29	1,2-Dichloropropane	VOA	0.255
10-29	2-Butanone	VOA	0.029
10-29	4-Methyl-2-pentanone	VOA	0.290
11-10	2-Butanone	VOA	0.026
11-10	Acetone	VOA	0.059
11-10	Carbon Disulfide	VOA	0.122
11-10	Vinyl Acetate	VOA	0.198

ARRF = Average Relative Response Factor

The following non-CCC compounds had a Percent Relative Standard Deviation (%RSD) for the initial calibration greater than 30%.

Date	Compound	Fraction	%RSD
10-29	Vinyl acetate	VOA	109.5
11-11	Vinyl acetate	VOA	78.3

%RSD = Percent Relative Standard Deviation

4) Continuing Calibrations - Acceptable

All SPCC and CCC compounds were within contract required limits.

The Relative Response Factor (RRF)s for the volatile compounds 1,1-Dichloroethene, 1,1-Dichloroethane, cis-1,3-Dichloropropene and trans-1,3-Dichloropropene for the continuing calibration on 11-8-87 were calculated properly on the raw data sheet but were transferred incorrectly to the calibration form. The incorrect entries did not affect the Relative Response Factor (RRF) or the Percent Difference (%D) significantly.

The following non-SPCC compounds had Relative Response Factors (RRF) less than 0.05 for semi-volatiles and 0.300 for volatiles in the continuing calibration.

Date	Compound	Fraction	RRF
11-08-87	2-Butanone	VOA	0.023
11-08-87	1,2-Dichloropropane	VOA	0.255
11-08-87	4-Methyl-2-pentanone	VOA	0.290
11-09-87	2-Butanone	VOA	0.020
11-09-87	1,2-Dichloropropane	VOA	0.255
11-09-87	4-Methyl-2-pentanone	VOA	0.290
11-11-87	Acetone	VOA	0.054
11-11-87	2-Butanone	VOA	0.023
11-11-87	Carbon Disulfide	VOA	0.122
11-11-87	Vinyl acetate	VOA	0.198
11-10-87	4-Chloroaniline	BNA	0.009
11-24-87	4-Chloroaniline	BNA	0.017

RRF = Relative Response Factor

The following non-CCC compounds had a Percent Difference (%D) greater than 25% for the continuing calibration.

Date	Compound	Fraction	%D
11-08-87	Chloromethane	VOA	-28.5
11-08-87	Methylene chloride	VOA	-59.5
11-08-87	Acetone	VOA	82.5
11-08-87	Carbon disulfide	VOA	-79.6
11-08-87	1,1-Dichloroethane	VOA	-35.0
11-08-87	Carbon tetrachloride	VOA	27.9
11-08-87	Vinyl acetate	VOA	43.3
11-09-87	Methylene chloride	VOA	-51.1
11-09-87	Acetone	VOA	78.6
11-09-87	Carbon disulfide	VOA	-81.4
11-09-87	2-Butanone	VOA	28.6
11-09-87	Carbon tetrachloride	VOA	28.3
11-09-87	Vinyl acetate	VOA	49.6

Date	Compound	Fraction	%D
11-11-87	Chloromethane	VOA	-40.3
11-11-87	Carbon disulfide	VOA	-25.4
11-11-87	Vinyl acetate	VOA	-43.4
11-10-87	4-Chloroaniline	BNA	30.8
11-10-87	Hexachlorocyclopentadiene	BNA	42.6
11-10-87	2,4-Dinitrophenol	BNA	34.8
11-10-87	4-Nitrophenol	BNA	48.6
11-10-87	4-Nitroaniline	BNA	44.3

%D = Percent Difference

5) Instrument Detection Limits

The Instrument Detection Limits (IDL) were not supplied for any of the analytical equipment.

6) Blanks - Acceptable

All of the blanks for the volatile, semivolatile and pesticide/PCB analyses met the contract required limits for background contamination.

Fraction	Compound	Concentration ug/kg	CRQL ug/kg
VOA	Acetone	10	10

CRQL = Contract Required Detection Limit

7) Pesticide Standards

a) Linearity - Acceptable

The evaluation standards met the contract required limits of less that 10% relative standard deviation for linearity.

b) DDT Retention Time - Acceptable

The retention time for DDT met or exceeded 12 minutes for the standard runs.

c) Retention Time Windows - Acceptable

The retention time windows met the contract specifications.

d) Analytical Sequence - Acceptable

The analytical sequence met the contract required frequency and order.

e) 4,4'-DDT/Endrin Degradation - Acceptable

The percent breakdown for Endrin and DDT did not exceed the contract limit of 20% for the individual or combined breakdown totals.

f) Dibutylchlorendate Retention Time Shift - Acceptable

The Percent Difference (%D) calculated for the retention time of Dibutylchlorendate did not exceed 2% for the packed column.

g) Standards Summary - Acceptable

No pesticides or PCBs were identified. No action is required.

8) Surrogate Recovery - Acceptable

The surrogate recoveries for the volatile, semivolatile and pesticide/PCB analyses were within contract advisory limits.

9) Matrix Spike and Matrix Spike Duplicate - Acceptable

The Matrix Spike (MS) and Matrix Spike Duplicate (MSD) analyses for the volatile, semivolatile and pesticide/PCBs were within contract advisory limits.

10) Sample Analysis - Acceptable

No comment regarding the analysis of samples is required.

11) Laboratory Contact - No laboratory contact was required.

Data Use

The usefulness of the data is based on the criteria outlined in the "Laboratory Data Validation Functional Guidelines for Evaluating Organics and Pesticides/PCB Analyses" (R-582-5-5-01).

Upon consideration of the data qualifications noted above, the BNA, Volatile and Pesticide/PCB data are ACCEPTABLE for use except where flagged with data qualifiers that modify the usefulness of the individual values.

Additional data packages associated with this project are expected for CLP or EPA laboratories.

Data Qualifiers

U - The material was analyzed for, but was not detected. The associated numerical value is an estimated sample quantitation limit.

J - The associated numerical value is an estimated quantity because quality control criteria were not met or concentrations reported were less than the CRQL.

R - Quality Control indicates that data are unusable (compound may or may not be present). Resampling and reanalysis are necessary for verification.

Q - No analytical result.

N - Presumptive evidence of presence of material (tentative identification).

B - The compound was found in the laboratory blank as well as the sample.

M - Mass spectral criteria for positive identification were not met. However, in the opinion of the laboratory, the identification is correct based on the analyst's professional judgement.

F - Concentration of this compound exceeds either the primary or secondary drinking water standard listed in the Safe Drinking Water Act of 1974.

870206.ORG

Additional Information

Data tables included in this report may contain only those parameters pertinent to this site inspection. If a complete set of all data is required, including all undetected substances, please contact the U.S. Environmental Protection Agency, Region X, Superfund Branch, 1200 Sixth Avenue, Seattle, WA 98101. Requests should reference case, sample number, and site identification number.

APPENDIX E

SAMPLE DOCUMENTATION

SAMPLE TRACKING REPORT
ecology and environment, inc.
Seattle, Washington
Contract No.: 68-01-7347

SITE NAME	TDD NUMBER	CASE NUMBER	EPA SAMPLE NUMBER	LAB NUMBER	STORET NUMBER	SAMPLE DESCRIPTION	SAMPLE DATE	DATE SHIPPED	AIRBILL NUMBER	SAMPLE MATRIX	CONC	PRES	ANALYSES REQUESTED	LABORATORY
MONSANTO	8702-06	8383	87454300	MJB 539	16Z060	PW-1	11/03/87	11/05/87	4723548093	WATER	LOW	ICE	INORG/UN	RMAL
MONSANTO	8702-06	8383	87454300	MJB 540	16Z060	PW-1	11/03/87	11/05/87	4723548093	WATER	LOW	HNO3	INORG/F	RMAL
MONSANTO	8702-06	8383	87454300	3453J-01	16Z060	PW-1	11/03/87	11/05/87	4723548104	WATER	LOW	ICE	INORG/AN	CENTEC
MONSANTO	8702-06	8383	87454300	JC 754	16Z060	PW-1	11/03/87	11/05/87	4723548115	WATER	LOW	ICE	ORGANICS	DATAC
MONSANTO	8702-06	8383	87454301	MJB 541	16Z061	PW-2	11/03/87	11/05/87	4723548093	WATER	LOW	ICE	INORG/UN	RMAL
MONSANTO	8702-06	8383	87454301	MJB 542	16Z061	PW-2	11/03/87	11/05/87	4723548093	WATER	LOW	HNO3	INORG/F	RMAL
MONSANTO	8702-06	8383	87454301	3453J-02	16Z061	PW-2	11/03/87	11/05/87	4723548104	WATER	LOW	ICE	INORG/AN	CENTEC
MONSANTO	8702-06	8383	87454301	JC 755	16Z061	PW-2	11/03/87	11/05/87	4723548115	WATER	LOW	ICE	ORGANICS	DATAC
MONSANTO	8702-06	8383	87454302	MJB 543	16Z062	PW-3	11/03/87	11/05/87	4723548093	WATER	LOW	ICE	INORG/UN	RMAL
MONSANTO	8702-06	8383	87454302	MJB 544	16Z062	PW-3	11/03/87	11/05/87	4723548093	WATER	LOW	HNO3	INORG/F	RMAL
MONSANTO	8702-06	8383	87454302	3453J-03	16Z062	PW-3	11/03/87	11/05/87	4723548104	WATER	LOW	ICE	INORG/AN	CENTEC
MONSANTO	8702-06	8383	87454302	JC 756	16Z062	PW-3	11/03/87	11/05/87	4723548115	WATER	LOW	ICE	ORGANICS	DATAC
MONSANTO	8702-06	8383	87454303	MJB 545	16Z055	TW-15	11/03/87	11/05/87	4723548093	WATER	LOW	ICE	INORG/UN	RMAL
MONSANTO	8702-06	8383	87454303	MJB 546	16Z055	TW-15	11/03/87	11/05/87	4723548093	WATER	LOW	HNO3	INORG/F	RMAL
MONSANTO	8702-06	8383	87454303	3453J-04	16Z055	TW-15	11/03/87	11/05/87	4723548104	WATER	LOW	ICE	INORG/AN	CENTEC
MONSANTO	8702-06	8383	87454304	MJB 547	16Z056	TW-17	11/03/87	11/05/87	4723548093	WATER	LOW	ICE	INORG/UN	RMAL
MONSANTO	8702-06	8383	87454304	MJB 548	16Z056	TW-17	11/03/87	11/05/87	4723548093	WATER	LOW	HNO3	INORG/F	RMAL
MONSANTO	8702-06	8383	87454304	3453J-05	16Z056	TW-17	11/03/87	11/05/87	4723548104	WATER	LOW	ICE	INORG/AN	CENTEC
MONSANTO	8702-06	8383	87454305	MJB 549	16Z058	TW-36	11/03/87	11/05/87	4723548093	WATER	LOW	ICE	INORG/UN	RMAL
MONSANTO	8702-06	8383	87454305	MJB 550	16Z058	TW-36	11/03/87	11/05/87	4723548093	WATER	LOW	HNO3	INORG/F	RMAL
MONSANTO	8702-06	8383	87454305	3453J-06	16Z058	TW-36	11/03/87	11/05/87	4723548104	WATER	LOW	ICE	INORG/AN	CENTEC
MONSANTO	8702-06	8383	87454306	MJB 551	16Z057	TW-22	11/03/87	11/05/87	4723548093	WATER	LOW	ICE	INORG/UN	RMAL
MONSANTO	8702-06	8383	87454306	MJB 552	16Z057	TW-22	11/03/87	11/05/87	4723548093	WATER	LOW	HNO3	INORG/F	RMAL
MONSANTO	8702-06	8383	87454306	3453J-07	16Z057	TW-22	11/03/87	11/05/87	4723548104	WATER	LOW	ICE	INORG/AN	CENTEC
MONSANTO	8702-06	8383	87454307	MJB 553	16Z059	TW-37	11/03/87	11/05/87	4723548093	WATER	LOW	ICE	INORG/UN	RMAL

SAMPLE TRACKING REPORT
ecology and environment, inc.
Seattle, Washington
Contract No.: 68-01-7347

SITE NAME	TDD NUMBER	CASE NUMBER	EPA SAMPLE NUMBER	LAB NUMBER	STORET NUMBER	SAMPLE DESCRIPTION	SAMPLE DATE	DATE SHIPPED	AIRBILL NUMBER	SAMPLE MATRIX	CONC	PRES	ANALYSES REQUESTED	LABORATORY
MONSANTO	8702-06	8383	87454307	MJB 554	16Z059	TW-37	11/03/87	11/05/87	4723548093	WATER	LOW	HNO3	INORG/F	RMAL
MONSANTO	8702-06	8383	87454307	3453J-08	16Z059	TW-37	11/03/87	11/05/87	4723548104	WATER	LOW	ICE	INORG/AN	CENTEC
MONSANTO	8702-06	8383	87454308	MJB 555	163063	TW-38	11/03/87	11/05/87	4723548093	WATER	LOW	ICE	INORG/UN	RMAL
MONSANTO	8702-06	8383	87454308	MJB 556	163063	TW-38	11/03/87	11/05/87	4723548093	WATER	LOW	HNO3	INORG/F	RMAL
MONSANTO	8702-06	8383	87454308	3453J-09	163063	TW-38	11/03/87	11/05/87	4723548104	WATER	LOW	ICE	INORG/AN	CENTEC
MONSANTO	8702-06	8383	87454309	MJB 557	16Z064	TW-39	11/03/87	11/05/87	4723548093	WATER	LOW	ICE	INORG/UN	RMAL
MONSANTO	8702-06	8383	87454309	MJB 558	16Z064	TW-39	11/03/87	11/05/87	4723548093	WATER	LOW	HNO3	INORG/F	RMAL
MONSANTO	8702-06	8383	87454309	3453J-10	16Z064	TW-39	11/03/87	11/05/87	4723548104	WATER	LOW	ICE	INORG/AN	CENTEC
MONSANTO	8702-06	8383	87454310	MJB 559	16Z065	TW-40	11/03/87	11/05/87	4723548093	WATER	LOW	ICE	INORG/UN	RMAL
MONSANTO	8702-06	8383	87454310	MJB 560	16Z065	TW-40	11/03/87	11/05/87	4723548093	WATER	LOW	HNO3	INORG/F	RMAL
MONSANTO	8702-06	8383	87454310	3453J-11	16Z065	TW-40	11/03/87	11/05/87	4723548104	WATER	LOW	ICE	INORG/AN	CENTEC
MONSANTO	8702-06	8383	87454311	MJB 561	16Z067	SWG	11/04/87	11/05/87	4723548093	WATER	LOW	ICE	INORG/UN	RMAL
MONSANTO	8702-06	8383	87454311	MJB 562	16Z067	SWG	11/04/87	11/05/87	4723548093	WATER	LOW	HNO3	INORG/F	RMAL
MONSANTO	8702-06	8383	87454311	3453J-12	16Z067	SWG	11/04/87	11/05/87	4723548104	WATER	LOW	ICE	INORG/AN	CENTEC
MONSANTO	8702-06	8383	87454312	MJB 563	16Z066	MORMON SPR	11/03/87	11/05/87	4723548093	WATER	LOW	ICE	INORG/UN	RMAL
MONSANTO	8702-06	8383	87454312	MJB 564	16Z066	MORMON SPR	11/03/87	11/05/87	4723548093	WATER	LOW	HNO3	INORG/F	RMAL
MONSANTO	8702-06	8383	87454312	3453J-13	16Z066	MORMON SPR	11/03/87	11/05/87	4723548104	WATER	LOW	ICE	INORG/AN	CENTEC
MONSANTO	8702-06	8383	87454313	MJB 573	16Z069	POND 1	11/04/87	11/05/87	4723548093	SOIL	LOW	ICE	INORGANIC	RMAL
MONSANTO	8702-06	8383	87454313	3453J-15	16Z069	POND 1	11/04/87	11/05/87	4723548104	SOIL	LOW	HNO3	INORG/AN	CENTEC
MONSANTO	8702-06	8383	87454314	MJB 574	16Z070	POND 2	11/04/87	11/05/87	4723548093	SOIL	LOW	ICE	INORGANIC	RMAL
MONSANTO	8702-06	8383	87454314	3453J-17	16Z070	POND 2	11/04/87	11/05/87	4723548104	SOIL	LOW	HNO3	INORG/AN	CENTEC
MONSANTO	8702-06	8383	87454315	MJB 567	16Z071	POND 3	11/04/87	11/05/87	4723548093	WATER	LOW	ICE	INORGANIC	RMAL
MONSANTO	8702-06	8383	87454315	3453J-18	16Z071	POND 3	11/04/87	11/05/87	4723548104	WATER	LOW	HNO3	INORG/AN	CENTEC
MONSANTO	8702-06	8383	87454316	MJB 568	16Z072	POND 4	11/04/87	11/05/87	4723548093	WATER	LOW	ICE	INORGANIC	RMAL
MONSANTO	8702-06	8383	87454316	3453J-20	16Z072	POND 4	11/04/87	11/05/87	4723548104	WATER	LOW	HNO3	INORG/AN	CENTEC

SAMPLE TRACKING REPORT
ecology and environment, inc.
Seattle, Washington
Contract No.: 68-01-7347

SITE NAME	TDD NUMBER	CASE NUMBER	EPA SAMPLE NUMBER	LAB NUMBER	STORET NUMBER	SAMPLE DESCRIPTION	SAMPLE DATE	DATE SHIPPED	AIRBILL NUMBER	SAMPLE MATRIX	CONC	PRES	ANALYSES REQUESTED	LABORATORY
MONSANTO	8702-06	8383	87454320	MJB 582	16Z068	ED	11/04/87	11/05/87	4723548093	WATER	LOW	ICE	INORG/UN	RMAL
MONSANTO	8702-06	8383	87454320	3453J-28	16Z068	ED	11/04/87	11/05/87	4723548104	WATER	LOW	HNO3	INORG/AN	CENTEC
MONSANTO	8702-06	8383	NOTASSN1	MJB 580	N/A	TP	11/04/87	11/05/87	4723548093	WATER	LOW	ICE	INORG/UN	RMAL
MONSANTO	8702-06	8383	NOTASSN1	JC 757	N/A	TP	11/04/87	11/05/87	4723548115	WATER	LOW	ICE	ORGANICS	DATAC
MONSANTO	8702-06	8383	NOTASSN1	MJB 581	N/A	TP	11/04/87	11/05/87	4723548093	WATER	LOW	HNO3	INORG/F	RMAL

APPENDIX F

ORGANIC ANALYSIS DATA SHEETS

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

JC756

Lab Name: DATACHEM INC. Contract: 68-01-7466

Lab Code: DATAC Case No.: 8383 SAS No.: _____ SDG No.: JC754

Matrix: (soil/water) WATER Lab Sample ID: CLP1007

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: BI28JC756

Level: (low/med) LOW Date Received: 11/05/87

% Moisture: not dec. _____ Date Analyzed: 11/11/87

Column (pack/cap) PACK Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

0062

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JC754

Lab Name: DATACHEM INC. Contract: 68-01-7466

Lab Code: DATAC Case No.: 8383 SAS No.: _____ SDG No.: JC754

Matrix: (soil/water) WATER Lab Sample ID: CLP1005

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: BG97CLP5

Level: (low/med) LOW Date Received: 11/05/87

% Moisture: not dec. _____ Date Analyzed: 11/09/87

Column: (pack/cap) PACK Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	UJ
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	0.4	J
67-64-1	Acetone	15	J
75-15-0	Carbon Disulfide	5	J
75-35-4	1,1-Dichloroethene	5	U
75-35-3	1,1-Dichloroethane	5	UJ
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	UJ
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	UJ
108-05-4	Vinyl Acetate	10	UJ
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	UJ
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	UJ
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
----------	Total Xylenes	5	U

JEA 4/26/88

00231

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JC754

Lab Name: DATACHEM INC. Contract: 68-01-7468

Lab Code: DATAC Case No.: 8333 SAS No.: _____ SDG No.: JC754

Matrix: (soil/water) WATER Lab Sample ID: CLP1005

Sample wt/vol: 1000 (g/mL) ML Lab File ID: UC8JC754

Level: (low/med) LOW Date Received: 11/05/87

% Moisture: not dec. _____ dec. _____ Date Extracted: 11/06/87

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 11/10/87

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl Alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
39638-32-9	bis(2-Chloroisopropyl)Ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	50	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethyl Phthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U

00933

FORM I SV-1

1 EPA Rev.